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ABSTRACT

In a four-section final report with its focus on methodology rather than on findings of particular follow-up studies, this project addresses two needs--to identify, review, and analyze vocational student and employer follow-up efforts at local, state, and federal levels, and to prepare training materials useful to individuals or groups at all levels in designing, implementing, and evaluating follow-up systems. The report includes a summative product evaluation by external evaluators (representing state and local concerns) which notes favorably the distillation of research findings into a ten-step task model--a tool for conceptualizing a follow-up system wherein follow-up theory is "tempered" with real-world experience. The 110-page "National Review" section offers a generalized description that incorporates a state-of-the-art report on follow-up systems and a twenty-page bibliography. The 120-page "Training Guide" section covers actual follow-up system generation, with chapters devoted to planning, developing system parameters, designing the system, and operating, documenting, and evaluating the system. The project's primary purpose is to encourage development of follow-up systems that minimize costs while maximizing quality and adaptability. (CP)

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Final Report

Project No. 49AH70024
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A COMPREHENSIVE NATIONAL REVIEW AND PREPARATION OF TRAINING MATERIALS FOR STUDENT AND EMPLOYER FOLLOW-UP

NATIONAL REVIEW OF FOLLOW-UP PROCEDURES

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Abstract

The purposes were to identify, review and analyze vocational student and employer follow-up efforts to synthesize components and procedures into two products for dissemination, namely, a review and synthesis document and follow-up training guide.

Procedures included both traditional literature search and formal communications with states, U. S. Territories and Canadian Provinces. Relevant Findings were summarized and presented in the first document entitled "Follow-up Procedures: A National Review." A second product entitled "Follow-up Procedures: A Training Guide" used project findings in the development of a comprehensive set of training materials for use by state or local personnel.

The project included formative evaluation by a national panel of consultants and a summative evaluation of the products by external evaluators who represented state and local concerns. The final report includes the external evaluation report and the two project products as appendices.

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Introduction

Vocational educators have long recognized the importance of following through with their students after program termination. In the eyes of the local vocational educator, follow-up is a tool for evaluation and revision of curricula, facilities, and instructional methodology. At the state and federal levels it is seen as providing much of the information needed to demonstrate accountability.

The information needed at each level (local, state, and federal) may be thought of as having two basic components: (1) information unique or relevant primarily to a specific level, and (2) information generalizable to and of importance to more than one of the levels. Also, information may be gathered with an accountability/evaluative and/or analyses/improvement intent. Currently, it is often impossible to compile or aggregate data across localities or states due to sporatic and nonsystematic data collection. Increasing pressure for specific data at higher levels may have two undesirable effects if efforts are not systematized: (1) collection of information required to satisfy an accountability/evaluative intent at the expense of analysis/improvement types of information, and (2) collection and aggretation of information at state and federal levels without feedback to localities.

The Problem

Title II of the Education Act of 1976 (P.L. 94-482) mandates increased efforts in the follow-up of students and employers. Indications are strong, however, that many if not most of the personnel who will be charged with major responsibilities in this area are not well prepared to meet this challenge. Additionally, while many follow-up systems exist, most appear to operate in relative isolation. A comprehensive review and synthesis of what is known about following-up vocational students does not exist. Much time, money and effort seems to be spent in re-inventing the wheel in such basic areas as the application of mailed survey and interview protocols to vocational follow-up, sampling strategies, instrument design and validation, determination of data requirements and summary techniques. Troublesome questions continue to be raised about the kinds and scope of data being collected, data compatibility, and the reliability and validity of the data collected. At the same time, these data are being used as a basis for making decisions.

The Need

Follow-up systems must be developed to meet the specific requirements or needs. However, certain basic principles and research methodologies should provide a sound foundation and guidelines for any effort. The knowledge gained through the continuing efforts of individuals and groups in many states can be beneficial in determining what works and what doesn't. The problem, stated quite simply, is that these principles and guidelines are not readily visable to the people who need them. In addition to the lack of visibility and availability, this information has not been "packaged" in a form which is convenient to use and understandable to many persons. Therefore, two strong needs emerged:

1. The need for identification, review, analysis, synthesis and evaluation of successful follow-up procedures, and

2. The need for the presentation of the results of such a review coupled with an understandable application of basic research methodologies, in a manner which will maximize its use to persons involved in follow-up efforts.

The objective of the project was to alleviate the two needs stated above by:

1. Conducting a comprehensive national review of, and describing the present status of vocational student and employer follow-up at local, state, and federal levels; and
2. Preparing training materials useful to individuals or groups at all levels in designing, implementing and evaluating follow-up systems.

Methods and Procedures

The project "A Comprehensive National Review and Preparation of Training Materials for Student and Employer Follow-up" was funded as Research Grant G007702143 effective September 1, 1977 to February 28, 1979 (18 months). The purposes of the project were to identify, review and analyze student and employer follow-up efforts and to synthesize findings into two major products: (1) a review and synthesis document and (2) a vocational follow-up training guide. The central focus of the project was on methodology rather than the findings of particular follow-up studies and systems. Some forty methodological elements were identified and each follow-up report, manual, or procedures/users guide obtained was reviewed in a uniform manner on each of the forty elements. Specific information on the procedures employed to identify, obtain and review documents is provided in the first document and is summarized in this report.

A national advisory panel of experts in the areas of follow-up and management information systems was formed early in the project. This panel served as advisors and formative evaluators of the project procedures and products. The assistance of the panel was invaluable in locating quality follow-up efforts, identifying the methodological elements, and the overall conduct of the project. The project staff made every effort to locate local, state, regional and national follow-up efforts.

Procedures employed during the conduct of the project were divided into two phases, roughly corresponding with the production of the two products.

The first phase, review and synthesis, and three specific objectives:

1. To provide a descriptive summary of follow-up procedures as presented in the literature and in current use.
2. To identify procedures which may be useful in the design, operation or evaluation of follow-up systems.
3. To provide a resource document to designers and operators of follow-up training guide.

Specific tasks carried out during the first phase are detailed in the review document but may be summarized as: (1) Orientation and training of staff, (2) Conduct manual literature search, (3) Conduct computerized searches, (4) Identify panel of consultants, (5) Initiate communication with State Directors of Vocational Education and MIS personnel, (6) Review, abstract and synthesize information from documents retrieved, (7) Meet and confer with panel of consultants, (8) Conduct on-site visits, (9) Write first draft of product one, (10) Panel of consultants review document one, (11) Revise and write final draft of document one, and (12) External evaluators conduct on-site orientation and evaluation.

The second phase of the project had as the primary objective the preparation of a training guide. The specific tasks employed were: (1) Develop an initial follow-up task list, (2) Submit task list to panel of consultants at second meeting and revise based on their recommendations, (3) Determine training manual sections, (4) Develop training manual section outlines, (5) Write training manual sections and submit each to panel of consultants for critique, (6) Revise training manual sections based on panel critique, (7) Prepare final draft of training manual, (8) Submit both products one and two to external evaluators, and (9) Prepare Final Report and Disseminate Products to state and local personnel.

Interim (quarterly) reports and the two project products provide greater detail of procedures used in each of the above major tasks. Specific details as to number and scope of documents retrieved, definitions used, identity of consultants and other such information is also included in the products, each of which is appended to this report.

Results and Findings

The project combined research and development efforts to identify what is known and has been done in the area of follow-up, synthesized the findings and applied them to the development of training materials.

The final products are training materials which will enable vocational personnel at any level, but especially at the local level, to design, implement, and evaluate a systematic follow-up program compatible with current or future data requirements. The primary intent was to encourage the development of follow-up systems that minimize costs while maximizing quality and adaptability. No single follow-up model could be identified that would be applicable and valid in all situations. Therefore, the emphasis of the training material is on describing the options available and the advantages and disadvantages of those options. The options and their associated characteristics were developed from basic principles and research methodologies as well as the review of current follow-up procedures.

During the review portion of the project, well over 1,000 pieces of literature related to follow-up and published since 1970 were identified. While many of these were found to be only peripherally related to follow-up procedures, a vast amount of literature describing different aspects of follow-up exists. However, a shortage of literature seems to exist in two areas. The first is descriptions of local follow-up efforts. Even though it appears that a considerable number of localities conduct follow-ups, little seems to be published and available that describes those efforts. Second, information detailing the development and costs of existing systems is in short supply. Most of the available literature focuses on the findings and results of follow-up. A lesser amount describes procedures in detail. Little is available that documents the development of existing systems in any detail.

In summary, two documents were produced as a result of the product. The review and synthesis of current procedures is entitled, Follow-up Procedures: A National Review. The companion document is entitled: Follow-up Procedures: A Training Guide. These documents are included as appendices B & C and describe the results and findings of the project in greater detail. Sufficient copies of both documents were printed to allow dissemination to State Directors of Vocational Education as well as other individuals who had requested copies. In addition, the results and findings of the project were presented upon request at several conventions and workshops including the American Vocational Education Research Association, 1978 National T & I Conference and the American Vocational Information Association Conference.

Conclusions

The project procedures provided for the review of vocational follow-up documents from most states, the trust territories and the Canadian Provinces. Several conclusions may be drawn about both the findings and the project.

Conclusions related to project findings

1. Methodology - the degree of systematic planning of follow-up procedures varies widely. Unique situations and changes in requirements at local, state, and national levels mandate variance in data collected and to some extent procedures employed to collect and analyze such data. It may be concluded, however, that there should be less variation in the major tasks or activities involved in the design, operation and evaluation of vocational follow-up systems.

2. Quality of data - The purpose of this project was not to examine actual findings of follow-up studies but rather to review and synthesize procedures used. It is possible, however, to make some judgements about data quality from procedures, return rates, instrumentation and other factors. Although many studies had what were judged to be inadequate return rates, few checked for or assessed non-respondent bias. Generalizations to the total population, however, were usually made or inferred. It is concluded that in many cases such generalizations were probably unwarranted.

3. Reporting and interpretation - The majority of the follow-up reports reviewed included little if any interpretation of data. Typical formats included numerous data tables without benefit of explanatory narrative, reporting of procedures, return rates or context of the study. Specialized reports to relevant populations such as advisory groups, the general public and school personnel were not common. It is therefore concluded that the data which are collected are at best underused and at worst probably misinterpreted due to the lack of explanation and interpretation by follow-up personnel.

4. Scope, quality and availability of information. - Follow-up of students and employers is taking place in all states and territories. Much of the work which is being done does not find its way into formal literature collections such as the ERIC system. Several exemplary systems were located and most had good documentation and are producing admirable results. It is concluded that information and guidance on the design, operation and evaluation of quality follow-up systems is available but not widely disseminated. The products produced by the present project should assist future developers and operators of vocational follow-up systems in locating and using information from other systems.

5. Attitudes toward follow-up - Findings of the present study indicate that both student and employer attitudes toward follow-up are generally positive. It is concluded that respondent attitudes toward follow-up should not be a barrier to future efforts, particularly in the case of well designed and executed studies.

6. Use of follow-up data - As mentioned in number three above, there appears to be less than optimum use of the follow-up data which are currently being collected. Instances were found where follow-up data were effectively used to benefit vocational education fianancially, programatically, and for increasing public awareness and acceptance vocational education. The primary use, however, remains one of compliance with reporting requirements of higher agencies. It is concluded that greater use of quality follow-up data is warranted and that intended use is an important design criterion often overlooked in system design.

Conclusions related to the project

1. While literally hundreds of follow-up reports, manuals and articles were located and reviewed by the project staff, the multiple procedures used failed to locate many efforts which were not included in the formal published literature. Contacts with state level personnel and persons identified by them helped but did not eliminate the problem of locating local or institution-specific follow-ups. It is concluded that the procedures used, while extensive and varied, did not identify adequate numbers of locally conducted vocational follow-up studies.

2. Documents reviewed revealed considerable redundancy of procedures, both adequate and inadequate. It is concluded that the project procedures did identify a representative cross-section of materials from a methodological perspective.

3. The panel of consultants reviewed both the project's procedures and its products. Many suggestions were made by panel members as individuals and collectively during panel meetings. It is concluded that the scope, accuracy, and overall quality of the two products benefitted from panel input and critique.

Recommendations

1. As was pointed out in the review document, most designers for follow-up systems want to know which procedure works "best" under a given set of circumstances. The review did locate a number of research studies which assessed alternative procedures but for the most part these studies were limited in scope and generalizability. Due to the large number of variables involved and the uniqueness of specific

follow-up studies, findings of such studies are not strong enough to make recommendations of specific methodologies. The Training Guide, therefore, presented methodological alternatives and their advantages and disadvantages. It is recommended that more carefully designed studies on prompts, incentives, mailing sequences and other specifics of follow-up methodology be conducted. Such studies should provide valuable information for designers of follow-up but will probably not be able to provide answers to the "one best procedure" type of question.

2. The implementation of VEDS provides the opportunity for the first time of having a national vocational education data set on a minimum number of variables. These variables are not, however, necessarily the informational items needed by the local or state educational agency for program analyses, improvement, and planning. It is recommended that such agencies consider their total data requirements in the design of follow-up components of management information systems to avoid the creation of multiple systems. Care should be exercised to avoid the loss of important local and state evaluation and planning data in the process of securing state-wide compliance data. The systematic procedures provided in the Training Guide product should assist in this effort.

3. Vocational student and employer follow-up information is important and merits wider dissemination. It is recommended that directors of local and state efforts make every effort to enter at least summaries of procedures and findings into the ERIC system. Future planners will benefit from such reports and will have a constantly updated list of persons to contact for further information as needed.

4. It is recommended that existing agencies such as the American Vocational Information Association (AVIA) and the American Vocational Association (AVA) provide a forum for the exchange of follow-up and other management information. Local and State vocational and management information system personnel need to maintain and increase dialog on both the procedural and content issues of vocational information systems.

5. Increased standardization of data elements and format beyond the present requirements of VEDS seem desirable. It is recommended that a series of regional workshops be sponsored by U.S.O.E. which bring together key local and state personnel to investigate ways of obtaining greater uniformity within and across states.

Appendix A

Third Party Evaluation Report

THIRD-PARTY EVALUATION

for

A Comprehensive National Review and Preparation of Training Materials for Student and Employer Follow-Up Project

Submitted by: James F. Henry
John R. Kroll

1979

Introduction

This third-party evaluation report is intended to provide the reaction of two vocational education administrators having experience at both state and local levels to the two documents which have been developed in the project: "A Comprehensive National Review and Preparation of Training Materials for Student and Employer Follow-Up" (NRFUP). These documents are:

"Follow-up Procedures: A National Review"

and

"Follow-Up Procedures: A Training Guide"

The evaluators were given the task of assessing these documents in terms of accuracy, usability and format. Given the increased emphasis at the federal level of follow-up to be used as a primary tool for vocational program evaluation and planning, this project is both timely and pertinent to national, state, and local needs.

Finally, the evaluators wish to express their appreciation for being invited to participate in this activity. Also, thanks go the project staff at VPI&SU for their hospitality and assistance, and to all those others who helped us in this endeavor.

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I. PURPOSE

The "Review" serves the purpose of providing a generalized description of the "state of the art" of follow-up as practiced throughout the nation. An extensive attempt was made to collect information from all sources, especially at the state level. Although information on local follow-up activities is limited, the reason lies more in the unavailability of the information than in the project staff's efforts to locate and describe local follow-up systems.

The "Training Guide" provides an excellent process outline for agencies to use in developing a follow-up system. Inexperienced follow-up personnel should benefit in terms of planning, designing, implementing and evaluating a follow-up system. The fairly generalized level of specificity will be of limited value to personnel experienced in follow-up and needing fairly detailed or complex information to modify and improve an existing system. However, it is recommended that the task outline, with its emphases on planning input and evaluation, be utilized in all follow-up systems which are being developed or modified.

Conclusion: The documents serve the purpose of the project in that the "state of the art" of follow-up is adequately described and an excellent process guide can be made available for those who operate follow-up systems.

II. METHODOLOGY

The study's approach is refreshing in that it addresses the theory (the ideal) of follow-up tempered with the accumulated experience of a significant number of "real world" follow-up activities. The resultant tasks model in the "Training Guide" presents a practical approach to addressing all areas of potential need which can be served by a follow-up system.

It is assumed that much of the project methodology will be described in the final report and, therefore, correctly was not included in these product documents. The ivolvement of the steering committee and the description of the supplemental search by "contacting" state and local personnel should be included in the final report.

Although the primary purpose of the study deals with follow-up, it would have been beneficial to have identified and discussed in more detail some alternative methods for securing planning and evaluation information, particularly in relation to how alternatives can be used to supplement follow-up information. Some examples of alternatives are staff and/or peer evaluations, certification and other requirement standards, and advisory council input. Also, references made to using marketing research techniques to improve follow-up activities could have been further developed.

Two national longitudinal follow-up studies are mentioned but not included in the bibliographic section. It is believed that some specific description of these studies would be beneficial to the user.

Analysis of the relationships between activities or strategies and resultant data returns and quality would assist follow-up designers in selecting methods which yield best results. If such analysis was not considered to be practical, the need for further study should have been presented in the "Review"

Although potential users of follow-up information are listed, their participation in planning for and utilizing information from follow-up should be more fully described. Greater emphasis could be given to the wide range of national, state, area, and local personnel who should be involved in follow-up activities.

Conclusion: The methodology for collecting information about follow-up systems and providing descriptive data about follow-up systems is consistent and thorough. This methodology could be expanded to accomodate more in-depth analysis of the descriptive data in terms of what characteristics, practices and trends would provide improvement in response rates and quality.

III. FINDINGS

The two documents together provide a good descriptive overview of the need for, development, operation, and evaluation of follow-up systems. A significant result of the findings of the NRFUP study should be further investigation into the more complex aspects of follow-up in order to further assist follow-up personnel and their agencies in detailed follow-up systems planning.

Again, because inter-study analysis is not provided, the findings do not fully address some important concerns in follow-up design. To mention a few:

-- What prompts and/or incentives produce in terms of response rates and data quality.

-- The "prepping" of potential respondents and its potential for benefiting the follow-up results.

-- The potential benefit from providing follow-up data feedback to respondents.

-- A more detailed discussion of potential system interfaces which could link in with the follow-up system.

-- The knowledge and skills needed by personnel required to develop and operate a follow-up system.

These concerns should not be construed to imply that the findings contained in the NRFUP documents are not significant. Particular attention should be given to the narrative discussions in both the "Review" and the "Training Guide" which present the project staff's assessment of how well current follow-up practices meet planning and evaluation needs and provide their emphasis on the importance of carefully planning to improve the current status of follow-up. In view of the requirements of the Vocational Education Amendments (P.L. 94-482), which mandate follow-up and shape the Federal Vocational Education Data System (VEDS) being developed by the National Center for Education Statistics (NCES), the concerns and suggestions noted in the NRFUP study are pertinent and should be seriously considered by vocational administrators at all levels. If the federal compliance reporting requirements are to be significantly expanded (and apparently they are), the opportunity to collect important planning and evaluation data which will serve all levels should not be overlooked.

Conclusion: The findings contained in the two NRFUP documents accurately address current needs and should be considered by those who are responsible for follow-up systems. For fairly specific instances related to the design and utilization of follow-up systems, further study is indicated.

IV. DOCUMENT

The documents are well-designed and should prove easy to work with by those who use them. Some suggestions for improvement are noted which would enhance the documents' usability, but which are not crucial to their use.

The "Review" and "Training Guide" contain identical sets of definitions. It is expected that both parts will need to be used together, and one set of definitions would be sufficient. Some terms such as "non-respondent bias," "trend" and cohort longitudinal studies," although defined in the narrative, should be included in the definitions.

A summary page which describes both sections in term of purpose, structure, and use should be included ahead of the "Review section.

Although the narrative content exactly follows the Table of Contents, the inclusion of an outline (alpha/numeric) coding system would help the reader maintain better continuity in terms of how each narrative section related to the whole. This applies particularly for the "Training Guide."

In each document, the first references to bibliographic listings (numbers in parentheses) should be footnoted.

In several instances the provision of an illustration would have benefited the reader. One example: in the "Training Guide" discussion of using a chart to identify potential users, data needs and time frames, the provision of a sample chart would benefit particularly those who have no experience in charting activities. Where illustrations are provided, they are excellent.

In Tables 30 and 31 in the "Review," line totals would have been helpful in cross-checking data totals and comparing characteristic elements.

Conclusion: It can be appreciated that in designing, preparing and assembling a set of documents of the scope contained in the NRFUP study certain organizational features are intentionally or unintentionally omitted. Basically the documents' quality and design serve the purposes of which they are intended.

V. UTILIZATION

The distilliation of the research findings into the ten-step task model provides an excellent tool for conceptualizing a follow-up system. Also, the common sense, "real world" approach used in the study should be of great value to those who will use it to develop or modify their systems. Many examples of this approach are evident in the "Training Guide's" narrative discussions of what to do and not do, and when and how to do it.

The repeated suggestions which encourage the reader to explore further reference materials and/or to secure technical assistance enhance the value of the documents.

Although the narrative part of the "Training Guide' discusses in some detail the activities required in planning follow-up design and operation, the flow charts describe activities at only two, fairly basic levels of eomplexity. For advanced follow-up system personnel, additional flowcharting which describes greater complexity of activities and concerns would be beneficial.

A significant number of studies referenced in the bibliographic listings were obtained outside the ERIC system. It is questioned that these materials would be easily or quickly accessible to potential users. Hopefully, some efforts will be made to ensure their availability to state and local personnel.

The distribution of two sets of the documents to each state and territory should be supported with inservice training and USOE encouragement.

Experience demonstrates that distribution is not dissemination; additional efforts will be necessary to ensure that the "Training Guide" is used to its maximum potential.

Summary: The utility of the "National Review" lies in its description of the current state of the art in follow-up from the standpoint of methodology and its listing of potential resources. The "Training Guide" presents an excellent overview of how to proceed through the development and implementation of a follow-up system and what realistic concerns should be accommodated by those involved with follow-up. In view of the NCES follow-up requirements presently being finalized, the NRFUP study is both timely and meaningful.

I. RECOMMENDATIONS FOR FUTURE ATTENTION

1. Conduct further analysis of the relationships between follow-up system characteristics and resultant response characteristics.

2. Explore further private marketing research techniques which might be utilized to increase response rates and improve data quality.

3. Develop a series of in-depth papers on each element in the task model in order to assist the experienced follow-up practitioner with more complex, detailed activities associated with system modification and fine-tuning.

4. Establish a uniform system of accounts whereby costs can be calculated across the entire range of local, state, and national follow-up activities.

5. Dissemination of the NRFUP documents should be supported by in-service training, audio/visual materials, and USOE/NCES commitment.

6. Information developed in the NRFUP study should be coordinated with any similar studies of national significance currently operating or being planned.

7. An assessment of the utilization of the NRFUP study should be conducted in 19-24 months after it is sent to the states.

Appendix B

Follow-Up Procedures: A National Review

FOLLOW-UP PROCEDURES: A NATIONAL REVIEW

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A Comprehensive National Review and Preparation of
Training Materials for Student and Employer Follow-up

1979

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INTRODUCTION

Background

Accurate student and employer follow-up data is recognized as important to program planning and improvement. It is also a primary outcome measure in many overall management information systems. This is reflected in the general literature of the field as well as in the Educational Amendments of 1976 and accompanying regulations. Concern, however, has been expressed regarding the unavailability of much needed data and the apparent lack of reliability and compatibility of existing data. A number of research efforts which incidentally acquired data on "vocational" students have been used as national data sources to make judgements about vocational educations' effectiveness. This is at least partially a result of the unavailability of data collected specifically for that purpose. Early studies from Project Baseline (238, 239) revealed the scope of the problem. Of primary concern were missing data elements and incompatibility of existant data on national and state levels. Recommendations were made regarding the primary features of a national system for collection of data on former vocational students and their employers.

Several excellent local and statewide systems for vocational student and employer follow-up are in place. There is, however, considerable variability in the scope and quality of what is being done across the country. The three problem areas of data type and scope, data reliability and validity, and data compatiblity are natural targets for improvement through the development of a national data system for vocational education. It seems apparent, however, that the primary emphasis of a national system, and even related state systems, will be accountability and planning. Individual program improvement, the original and continuing motivation for local vocational educators to follow-up their students, could get lost in the rush to develop state and national systems.

Reasons for Follow-up

The Vocational Education Section (Title II) of the Education Amendments of 1976 (P.L. 94-482) emphasizes the need for follow-up of former vocational education students and their employers. Two criteria which have been mandated in the new act are the extent to which former students obtain employment in occupations related to their training and the satisfaction employers of those students express relative to their pre-employment preparation. Specifically, Section 112 (B) of the 1976 Act states:

> ...Each state shall evaluate by using data collected whenever possible, by statistically valid sampling techniques, each such program which purports to impart entry level job skills according to the extent to which program completers and leavers -
> "(i) find employment in occupations related to their training, and
> "(ii) are considered by their employers to be well-trained and prepared for employment,
> except that in no case can pursuit of additional education or training by program completers or leavers be considered negative in these evaluations. (p.2187).

The intent of the legislation is clear. Follow-up data relative to the product and process of vocational education programs will be collected. Additionally, it is required that the results of these follow-up activities be used in the planning and evaluation of vocational programs. Although punitive measures are specified for noncompliance, the gathering of useful and useable information seems to be the main objective.

In addition to the emphasis on accountability in federal legislation, a number of state legislatures have enacted laws in an attempt to make publicly funded programs accountable. An excellent example of this trend is the widespread establishment of minimum requirements for high school graduation. It would be unrealistic to expect a reversal of this trend.

There is increasing competition among various agencies for financial support. Those institutions which are successful in obtaining support can expect government officials to impose accountability requirements. Indeed, the general public is insisting that such regulations be enacted. In order to maintain public support, Vocational Education must be able to demonstrate quite clearly that funds have been spent in a beneficial and efficient way. Most of the data collected during the period that students are enrolled is helpful in establishing the efficiency of the program in terms of fiscal management. However, little evidence is produced that will help define what effects the program has had and the benefits of maintaining that program.

In order to describe any long term or lasting effects of a vocational education program it is necessary to collect information which describes what happened to students following their exit from the program. It should be obvious that this type of information can only be obtained through some type of follow-up procedure. Whether a formal or informal follow-up system is used, the level of sophistication of that system will be largely determined by the objectives of that effort. Current legislation, however, requires a minimum level of sophistication.

Graduates and their employers are often the first to identify areas in which recent technological change has created a need for program revision. Every vocational student has the right to receive up-to-date instruction that is compatible with the performance requirements on the job.

Information obtained by following up former students can also be useful in making decisions about program expansion or reduction. Results may indicate a growing labor market need and thus provide support for program expansion. The need for new programs may be established as a result of the identification of an emerging labor market need. On the other hand, programs may be considered for elimination if follow-up data detects that a labor market need no longer exists or that the salary or wages paid are so low that graduates will not enter the field. The use of follow-up data in decisions regarding program expansion or viability are consistent with the trend toward better management practices.

Follow-up data may also give teachers important feedback on the quality of their teaching performance. Such information is useful for self-improvement and as a source of self-satisfaction. Data regarding teaching effectiveness may well become increasingly important in the future.

The conduct and findings of follow-up studies of former students has considerable public relations value. The findings can be very useful in educating the public about the benefits of vocational education programs. Moreover, the fact that information is sought from members of the community not directly involved with vocational education programs can build good will with the general public.

Follow-up is often viewed as a task that must be accomplished in order to meet reporting requirements. This narrow view of follow-up ignores most of the benefits of follow-up while maximizing the liabilities. Follow-up should be viewed as part of a conscious effort to improve programs. If this is to happen, it must be an integral part of planning and evaluating systems.

Overview of the Project

The project "A Comprehensive National Review and Preparation of Training Materials for Student and Employer Follow-up" (NRFUP) was funded as Research Grant G00 770-2143 effective September 1, 1977 to February 28, 1979 (18 months). The purposes of the project were to identify, review, and analyze student and employer follow-up efforts and to synthesis findings into two major products: (1) a review and synthesis document (2) a vocational follow-up training manual.

The central focus of the project was on methodology rather than findings. Some forty methodological elements were identified and each follow-up report, manual, or procedures/users guide obtained was reviewed in a uniform manner on each of the forty elements. Specific information on the procedures employed to identify, obtain and review documents is provided in this report.

A national advisory panel of experts in the area of follow-up and management information systems was formed early in the project. This panel served as advisors and formative evaluators of the project procedures and products. The assistance of the panel was invaluable in locating quality follow-up efforts, identifying the methodological elements, and the overall conduct of the project.

The project staff made every effort to locate local, state, regional, and national follow-up efforts. Despite this extensive search there is little doubt that many excellent follow-up efforts were not identified. Also, some systems which were known to produce good results did not provide sufficient documentation for an adequate methodological review. Even with these limitations, the present document should prove to be a useful reference to vocational personnel as they develop new or refine and improve existing follow-up systems.

Rationale for the review - The need for accurate and timely follow-up data on vocational students and their employers has steadily increased. Historically, vocational educators have been concerned about the post program success of their students, but recent developments on both federal and state levels have emphasized the need for systematic approaches to follow-up research of increasing scope and sophistication. The last comprehensive review of vocational follow-up was prepared by Little (1970). That review was conducted to bring together information on follow-up procedures being used at that time.

Purpose of the review - The purpose of this document is to provide a current review and synthesis of student and employer follow-up procedures. It should be noted that the review focused on procedures, not follow-up findings or results. Moreover, only those efforts conducted since 1970 were included to minimize overlap with Little's (1970) review.

Objectives of the review - The specific objectives of this review were:

1. To provide a descriptive summary of follow-up procedures as presented in the literature and in current use
2. To identify procedures which may be useful in the design, operation or evaluation of follow-up systems
3. To provide a resource document to designers and operators of follow-up systems
4. To provide background for the preparation of the companion product, Follow-up Procedures: A Training Guide .

Review procedures - Follow-up studies have been conducted by a variety of personnel such as teachers, administrators, university faculty, state department of education personnel, and research organizations. The results are available from a multitude of sources but are most often reported in journals, monographs, and project reports. This project attempted to make use of many sources of information and to conduct the most comprehensive review of literature feasible given the time and budgetary constraints. Efforts concentrated in two specific areas: first, gathering published literature concerning follow-up studies and procedures; and secondly obtaining materials directly from national, state, and local educational personnel. The second effort was necessary to insure that the review reflected current practices.

The literature search began with a preliminary review of vocational journals as well as other related professional articles. This helped to identify the general and specific descriptor terms that were compatible with the ERIC system to be used in an on-line search mode. The major search was then conducted and yielded 888 abstracted citations. These citations were classified in an effort to facilitate document review. The classification description as developed by project staff and the number of citations classified into each category were:

Category	Description	No. of Citations
1	Directly related to follow-up and vocational and technical education	171
2	Directly related to follow-up but not within vocational and technical education	246
3	Broadly related to follow-up and vocational and technical education	63
4	Broadly related to follow-up but not within vocational and technical education	129
5	Unrelated or remotely related to follow-up within any field	279
	Total	888

Efforts were made to obtain and review all documents within Category 1. Follow-up studies classified as either 2 or 3 were selected if they were particularly relevant to the project's intent. Selected follow-up studies from outside vocational education were included since the primary focus of the review was on follow-up procedures rather than findings. Since the overwhelming majority of the documents reviewed were from vocational education, summary data were only slightly affected by such an inclusion. Where necessary and practical the authors of particular articles were contacted for additional information.

A second computer search was initiated through the ERIC system approximately eleven months after the project began. The objective of this effort was to ensure that more recent articles appearing in the ERIC system would not be overlooked. These additional studies were also classified and those most relevant were included for reference in the bibliography.

Descriptions of follow-up studies and systems were also obtained through direct communication with key individuals in state, territorial, and Canadian Province vocational education systems. A list of all state and territorial vocational education directors was obtained from information disseminated by the United States Office of Education (USOE). A list of appropriate state Management Information System (MIS) individuals was obtained and a letter was sent to each of the state, territorial, and province vocational directors requesting permission to contact the identified MIS personnel. If the name of the MIS person listed was not correct the state vocational education director was asked to supply the correct name and title. Names of other individuals within their jurisdiction with particular expertise in follow-up were also requested. All 63 state, territorial and province directors were contacted and each responded. Positive response, in the form of actual information, names of additional contact persons, or both, was received from 60 individuals. Only one negative response was obtained. Two directors indicated they were in the early stages of developing their follow-up systems and consequently did not feel they could be of much assistance. Inquiries were addressed to 60 MIS directors and 46 responses were received. All expressed a desire to assist in the project and materials were actually received from 25. The MIS directors provided 86 additional names and these persons were contacted. In summary, over 200 individuals in 63 states, territories, and Canadian Provinces were contacted either by letter or telephone.

Documents reviewed generally fell into one of two categories. The first category was reports of actual follow-up studies that included results. The other type of document reviewed was manuals or descriptions of follow-up systems that indicated the "how" of follow-up but did not report follow-up results. The materials typically provided by state vocational education and MIS directors were of the second type.

Review guidelines - Guidelines for review were formulated as follows:

1. The review should provide a descriptive summary of methods currently used in student and employer follow-up. Necessarily, the descriptive summary must be limited to efforts with sufficient documentation to allow review.
2. Not all aspects of all studies can be reviewed or described. Therefore, methodological elements which appear to be most important to the total follow-up effort should be identified and documents uniformly reviewed on these elements.
3. Certain procedural areas in the follow-up of vocational students and their employers have presented unique challenges to the developers and operators of follow-up systems. A more specific and detailed review of promising procedures in these areas should be conducted.
4. Although national and state reporting requirements dictate that certain data elements be included in student and employer follow-up, these generally constitute a minimum set. When available, instrumentation should be reviewed and a descriptive summary of data elements compiled.
5. A tabular summary of studies should be provided so that readers can identify particular studies according to specific methodologies.

In accordance with the above guidelines, this document is organized into seven major sections: (1) Introduction, (2) Overview of Follow-up, (3) Review of Selected Practices and Procedures, (4) Over-all Summary, (5) Bibliography, (6) State Contact Persons, and (7) Overview of *Follow-up Procedures: A Training Guide*.

Definitions

Census - An attempt to contact the total population rather than a sample from that population.

Compliance - Complying with or meeting the requirements of a law or agency.

Cross Sectional Study - A study in which data are collected at one point in time from several categories of individuals included in a larger population.

Data Element - A generic category of information such as "employment status" which may contain several data items.

Data Item - A specific piece of information within the data element (category) such as "employed full or part time".

Follow-up - The attempt to secure educational, employment or other information from or about former students for purposes of planning, reporting, evaluation or conducting research.

Incentive - A gift, payment, or technique used to elicit response.

Longitudinal Study - A study in which data are collected at different points in time in order to study changes or emplore time - ordered associations. Three types of longitudinal studies are commonly recognized: trend, cohort and panel. A panel longitudinal study is one in which the same individuals are followed-up at each data collection point. For purposes of the present study the terms panel longitudinal and longitudinal study are used synonymously.

MIS - An acronym for Management Information System. A system for collecting, compiling, analyzing and reporting information needed in making management decisions.

Non-Respondent - Individual who has not responded after all planned data collection procedures have been carried out.

Population - The total group with which the study is concerned.

Prompt - A reminder or other attempt to encourage response to a previous data collection attempt or to gain cooperation but not to actually collect data.

Reliability - The extent to which an individual's responses to follow-up instrumentation are consistant either within the instrument or over a short period of time.

Sample - A number of students or employers selected from the total population and intended to be representative of thay population.

Validity - The extent to which individuals provide the information the follow-up instrumentation was designed to collect.

VEDS - An acronym which stands for the National Vocational Education Data Reporting and Accountability System mandated by the Education Amendments of 1076 (P.L. 94-482).

Overview of Follow-up

Approximately 300 documents relating to some aspect of follow-up were reviewed during the course of this project. The majority of the documents reviewed were reports of the findings of a follow-up effort. The remaining documents were of three general types; manuals describing follow-up systems, methodological studies, and articles about follow-up. Several reviews of follow-up procedures conducted prior to this effort were also identified.

Descriptive Summary

The descriptive summary of follow-up reports has several important limitations. First, no reports published prior to 1970 were reviewed. Second, in many cases it was impossible to determine whether reports published by the same author or agency were based on the same follow-up data. Third, it was evident from the outset that those documents which were neither follow-up reports or system manuals could not be readily summarized in terms of the key data items identified by the project staff.

General characteristics - The data presented in Table 1 would seem to indicate that interest in conducting follow-up is increasing. That may be true as state agencies are responding to recent federal and state mandates as well as the need to develop data to justify public support. However, no effort was made to gather information which would indicate the extent of follow-up efforts in past years. In fact, the emphasis of this review was on summarizing the procedures described in the literature since 1970 and individuals contacted in the states, territories and provinces were asked to provide the most current information available. Table 1 indicates the number of studies reviewed by date of release.

Table 1

Publication Dates of Follow-Up Reports Reviewed (n=139)

1970	1971	1972	1973	1974	1975	1976	1977	1978	Not Specified
1	5	5	12	12	26	28	41	7	2

Table 2 indicates that State Department of Education (SDE) staffs are the group most active in conducting follow-up. This would be expected because of the need to meet Federal reporting requirements. Additionally, many of the follow-up reports prepared by contractors, administrators, and others were completed for SDEs. Those reports which were joint efforts most often were prepared in cooperation with the SDE. The single instance identified in which students conducted the follow-up and prepared the report was a local effort in Alaska (103). Students conducted the follow-up in conjunction with a job survey (104) and task analysis (105) as part of a classroom activity. The results, however, were used to fulfill local, state, and federal reporting requirements.

Table 2

Description of Individuals Preparing Follow-Up Reports (n=139)

Student	Teacher	Program Head	Administrator	State Dept. Staff	Contractor	Other	Combined Effort	Not Specified
1	4	4	26	39	29	25	7	4

Overall, the data in Table 3 indicate that the majority of formal follow-up efforts about which information is readily available are being conducted by or for state agencies. Many of those which did not specifically indicate a source of financial support can also be assumed to be state supported. Several joint state and local efforts were identified.

Table 3

Source of Financial Support for Conduct of Follow-Up (n=139)

Locality	State Agency	Federal Government	Grant	Other	More Than One Source	Not Specified
11	66	17	1	5	4	35

The objectives of follow-up efforts are seldom identified in follow-up reports. In some instances the objectives are implied but are not specifically defined. Less than one-third of the reports included in Table 4 stated or implied that one of the objectives of the follow-up was to generate the data necessary to meet compliance or reporting requirements. Yet, collection of reporting data may be assumed to be an objective of many of the efforts financed by state agencies. Overall, evaluation was the most frequently stated follow-up objective. The investigation of some specific research question was the most common objective among those studies found to have objectives classified in the category "Other".

Table 4

Objectives of Follow-Up Efforts (n=139)

	Compliance/Reporting	Planning	Evaluation	Other
Yes. . . .	43	81	102	39
No	91	53	32	96
Unclear. .	5	5	5	4

The academic level of the subjects followed-up is depicted in Table 5. Over half of the reports reviewed dealt with the follow-up of subjects who had been in post-secondary institutions. Former students of secondary institutions were the subjects of most of the remaining efforts. Few efforts to follow-up students from adult programs were identified. The category "Special Groups" includes follow-ups of such individuals as products of teacher training programs, non-academic programs, and drop-outs. The category "Special Groups" overlapped the other categories in the following instances: secondary in 2 cases; post-secondary in 2 cases; adult in 1 case; secondary and post-secondary in 1 case; and secondary, post-secondary, and adult in 1 case. Only seven reports were identified which dealt with the follow-up of former students at all three academic levels.

Table 5

Academic Level of Follow-Up Subjects (n=139)

	Secondary	Post Secondary	Adult	Special Group	Secondary & Post-Secondary	Secondary & Adult	Secondary, Post-Secondary & Adult
Yes. . . .	62	79	14	14	10	4	7
No	76	59	125	125	128	135	132
Not Spec. . .	1	1	0	1	1	0	0

Table 6 indicates that many follow-ups focused on or described localities. Many of these studies, however, were actually conducted or financed by state agencies. Therefore, the data do not indicate how many of the efforts were locally conducted but rather, the geographical region with which the follow-up was concerned. The predominance of reports describing state-wide data is directly attributable to the reporting requirements of State and Federal legislation and the difficulty inherent in identifying and securing materials from local agencies.

Table 6

Geographic Regions Described By Follow-Up Reports (n=139)

Locality	State	Other Region or Nation	Combination	Not Specified
52	68	13	3	3

Although the review of follow-up reports was structured so that reports of follow-up of former vocational students would be reviewed first, follow-up reports from other curriculums were reviewed as time permitted. Six of the reports included in Table 7 concerned the follow-up of former students from curricula other than Vocational Education. Twenty-five reports were found which described follow-up efforts that crossed traditional curriculum lines. Seven reports did not specify the population of concern.

Table 7

Curriculum in Which Follow-Up Subjects Had Been Enrolled (n=139)

Vocational Education	Curriculum Other Than Vocational Education	Vocational Education and Other Curricula	Not Specified
101	6	25	7

Table 8 indicates that in the majority of cases students were the primary source of follow-up information. It should be noted that numerous reports indicated information was sought from other sources if the former student could not be contacted. Those sources included former teachers, parents, guardians, or close relatives. Table 8 summarizes only those sources described as the primary source of data. The extent to which secondary sources were used is not known.

Table 8

Primary Source of Follow-Up Information (n=139)

Students Only	Employers Only	Both Students and Employers	Sources Other Than Student and Employers
104	13	20	2

Program completers were the most frequent subjects of follow-up according to Table 9. However, fifty-one efforts followed-up both program completers and non-completers. This may reflect reporting requirements specified in recent legislation. In several cases the category "Special Groups" overlaps the other categories. Generally this overlap occurred with "Program Non-Completers." Examples of the Special Groups are: disadvantaged, unemployed, physically and mentally handicapped, non-returning students, parents or former inmates. Since it was possible for each study to be concerned with more than one category or subject, every study is included in each column of Table 9.

Table 9

Program Completion Status of Follow-Up Subjects (n=139)

	Program Completers	Program Non-Completers	Both Program Completers and Non-Completers	Special Groups
Yes.	121	57	51	12
No	16	78	85	125
Not Spec. . . .	2	0	3	2

Because it was assumed that many of the follow-up reports would be part of [illegible] to meet Federal reporting requirements, the categories for reporting data about former students required by the Federal reporting forms were used to construct Table 10. Every study reviewed is included under each category. No attempt was made to identify the number of studies which reported data on former students in more than one category.

Table 10

Employment Status of Follow-Up Subjects for Which Data are Reported

	Full Time Employed	Part Time Employed	Un-employed	Con-tinuing Educ.	In Military Service	Other
Yes. . . .	104	81	88	80	67	72
No	18	41	34	42	55	50
Not Spec. . .	17	17	17	17	17	17

As reflected by Table 11, fewer than half of the documents reviewed reported data in a manner that made it readily identifiable with a specific program.

Table 11

Data Reported by Specific Programs (n=139)

Data Reported by Specific Programs	Data Not Reported by Specific Programs
68	71

An effort was made to determine the lowest level at which data could have been or were reported. Table 12 indicates that most follow-up efforts appear to have the capability of reporting data at the school district level or lower. Thirteen studies could report data by individual teachers or courses. In eleven cases it was impossible to identify a meaningful level of aggregation. This occurred most frequently when the follow-up focused on a special group or had as a primary objective investigation of some research question.

Table 12

Lowest Apparent Level of Data Aggregation (n=139)

Teacher	Course	Program	School	School District	Region	State	Nation	Could not be Determined
3	10	32	34	6	5	31	7	11

Approximately ten percent of the follow-up efforts included in Table 13 made some attempt to investigate differences between respondents and non-respondents. Several reports indicated that an effort was made to encourage non-respondents to reply. However, such a procedure was not considered to be a follow-up of non-respondents but rather a prompt to elicit response. In order to be classified as having made a non-respondent data collection effort, some special attempt must have been made to collect data from those who had not responded after all planned attempts at data collection were complete. Moreover, data obtained from those classified as non-respondents had to have been reported separately from that of initial respondents and some attempt made to compare initial respondents with non-respondents.

Table 13

Non-Respondent Data Collection Efforts (n=139)

Non-Respondent Data Collected	No Effort Made	Unable to Determine
14	109	16

Characteristics of student follow-up - The summary information presented in Tables 14 through 25 describe student follow-up efforts. Of the 139 reports reviewed, 126 were concerned with either the follow-up of students only or both students and their employers. The thirteen reports of efforts which followed-up employers only are not included in this section.

Table 14 indicates that 82 of the 126 reports of student follow-up describe a census. That is, an attempt was made to contact every former student in the study population. Slightly more than one-third of the efforts utilized some type of sampling technique. In six instances a combination of census and sampling techniques was used. An example of such an approach is the practice of collecting data from all former students in several service areas while collecting data from samples in the remaining service areas. Another study of this type collected data from the entire population (census) and then selected a sample from that census to determine the extent to which the two sets of data agreed.

Table 14

Nature of Student Follow-Up Efforts (n=126)

Census	Sample	Both Census and Sample	Not Specified
82	36	6	2

The rate of return obtained by student follow-up efforts was not always explicitly reported. An attempt was made to either collect that information or compute the return rate based upon the information available. Table 15 summarizes the reported and computed return rates. The median return rate for the 95 reports on which information was available was 60.3 percent. Ten studies reported return rates higher than 90 percent and five of those reported a 100 percent return. Only two studies were found to have return rates of less than 20 percent, the lowest being an 8 percent return.

Table 15

Percentage Return Rate for Student Follow-Up Efforts (n=126)

Up to 25	26 to 50	51 to 75	76 to 100	Impossible to Determine
7	25	34	29	31

The extent to which incentives were used is displayed in Table 16. Less than ten percent of the reports indicated that incentives had been used in an attempt to elicit returns. The types of incentives used varied widely with some efforts using more than one type. Examples of incentives that have been used are: money, packets of instant coffee, pencils, keychains, birthday cards and raffle chances. A wildlife stamp on the return envelope, personal signatures on cover letters and the printing of questionnaires on colored paper are techniques that have also been employed. One study was identified which compared the difference in return rates using incentives of 25 cents and 50 cents. As might be expected, the larger incentive resulted in a larger return. Eight reports implied the use of incentives but no evidence could be found that they had actually been used.

Table 16

Use of Incentives in Student Follow-Up (n=126)

Incentives Used	Incentives Not Used	Not Specified
9	109	8

The most popular data collection method used during the follow-up of former students was the mail-out questionnaire. Table 17 indicates that this is true for second and third attempts to collect data as well as the initial attempt.

Table 17

Methods Used to Collect Student Follow-Up Data (n=126)

	Q	TI	PI	QTI	QPI	TPI	QTPI	NS	NA
First Attempt	93	5	12	1	5	1	1	8	0
Second Attempt	56	6	1	2	0	0	1	22	38
Third Attempt	25	14	2	0	0	0	0	22	63

Key

Q-Questionnaire

TI-Telephone Interview

PI-Personal Interview

QTI-Questionnaire and Telephone Interview

QPI-Questionnaire and Personal Interview

TPI-Telephone and Personal Interview

QTPI-Questionnaire and Telephone and Personal Interview

NS-Not Specified

NA-No Attempt was Made

The personal interview was found to be the second most popular method of data collection in the second attempt to contact subjects. Telephone interviews were used more frequently in the second and third attempts to collect information than the initial effort. Approximately one third of the studies reviewed indicated that no attempt was made to collect data from those subjects not responding to the initial data collection effort. Only 41 of the reports indicated that at least three attempts were made to collect data. It should be noted that in order for a procedure to be classified as an attempt to collect data, some effort had to have been made to actually gather data, for example, a telephone call to encourage the return of a questionnaire would not have been classified as an attempt to collect data but as a prompt.

The amount of time allowed to elapse between data collection attempts varied widely. As shown in Table 18, two to three weeks were generally allowed to pass before a second contact was attempted. However, over one third of the reports reviewed indicated that ten or fewer days elapsed between the second and third attempts. The median number of days allowed to elapse between data collection attempts was 21. In some cases an unusual length of time appears to have elapsed. However, in most of those instances a prompt or series of prompts were used between attempts in an effort to encourage a response. An example of such a technique is: a mail-out questionnaire followed by a telephone prompt after 21 days with a second questionnaire being mailed 21 days after the telephone prompt.

Table 18

Number of Days Between Attempts to Collect Student Data (n=126)

	4-10	11-17	18-24	25-31	32-38	39-45	Not Specified	No Attempt
Between 1st & 2nd Attempts	0	12	15	7	1	5	48	38
Between 2nd & 3rd Attempts	6	2	8	2	1	2	42	63

Approximately 60 percent of the student follow-up reports indicated that some type of prompt had been used to encourage response. As classified in Table 14, a prompt is a reminder or other attempt to encourage response to a previous data collection effort or to gain cooperation but not actually collect data. The category "Letter With New Questionnaire" does not fit this definition completely. However, it was felt important to separate instances in which only a letter was used from those in which a letter with a new questionnaire was used. A majority of those choosing to use prompts, used a combination of prompts. While letters were the most popular single prompt, letters or cards in combination with telephone calls were also used.

Table 19

Types of Prompts Used to Elicit Response (n=126)

Letter	Card	Telephone Call	Letter With New Questionnaire	Combination of Prompts	Not Specified or Unclear	None Was Used
13	9	6	2	18	3	75

Table 20 substantiates the generally accepted notion that most follow-up efforts collect the information necessary to contact former students from program enrollment records. Over 70 percent of the reports that indicated when a student's address or telephone number was obtained, specified that it was secured while the student was still enrolled in the program. In four cases address information was collected both during and after the program. The address information collected after program exit was an attempt to up-date the addresses of students who had exited the program several years earlier but were included in the follow-up effort as part of a cross-sectional design.

Table 20

When Student Contact Information was Collected (n=126)

During Program	After Program	Both During and After Program	Not Specified
79	26	4	17

The information presented in Table 21 reflects the influence of Federal reporting requirements on the timing of student follow-up. Seventeen studies were identified in which students were followed-up three or fewer months after the program completion or exit. Over 70 percent of the reports that specified when the first contact was attempted indicated that it was within one year of program exit.

Table 21

Time in Months Between Program Completion or Exit and First Contact Attempt (n=126)

1-6	7-12	13-18	19-24	31-36	37-42	43-48	55-60	Not Spec.
30	32	3	9	5	1	2	3	41

The small number of longitudinal follow-up efforts being conducted is emphasized by Table 22. Less than ten percent of the studies identified were longitudinal in nature. A few additional studies were identified as being of a cross-sectional design.

Table 22

Longitudinal Student Follow-Up Efforts (n=126)

Longitudinal Effort	Not Longitudinal	Not Specified
7	114	5

Table 23 indicates that follow-up information was collected directly from former students in the majority of instances. Parents, educational supervisory personnel, file data, and "reliable individuals" comprised the category "Other". Those efforts which utilized a combination of sources attempted to collect data from teachers, parents, guardians, or a close relative whenever the former student could not be contacted.

Table 23

Source of Student Follow-Up Information (n=126)

Student	Teacher	Other	Combination of Sources	Not Specified
102	3	3	16	2

The extent to which the costs associated with a student follow-up are reported is depicted in Table 24. Costs were reported in two basic formats, total cost and cost per student. Total cost reported ranged from $150, for limited specialized follow-up, to approximately 20,000 dollars for a state-wide system. One state reported an average cost per student of 90 cents to $1.06 at the local level. Exactly how costs were determined is often unclear. However major cost factors usually considered included clerical assistance, postage, supplies, and some data processing.

Table 24

Student Follow-Ups Reporting Costs (n=126)

Cost Reported	Cost Not Reported
8	118

The individual who prepares the report of student follow-up is not always a member of the agency responsible for collecting the data. Local schools are most often responsible for actual collection of the data. State Departments of Education (SDE) are the agency next most likely to be responsible for data collection. Of the 126 reports reviewed, local schools were responsible for data collection in 48 cases. SDEs collected data in 22 instances. Of the remaining 51 reports specifing who was responsible for data collection, contractors and school districts were most often identified as being responsible. This reflects the extent to which follow-up systems tend to be based on a local rather than a central data collection model.

Characteristics of employer follow-up - A limited number of employer follow-up efforts was identified during this review. Tables 25 through 33 describe the characteristics of those 29 studies as specified in the reports.

The extent to which employer follow-up efforts sought information from all employers (census) versus a sample of employers is depicted in Table 28. The majority of employer follow-up efforts contacted all employers of former students and were classified as a census. In a number of cases only the employers of former students meeting specific criteria, such as employed full-time, were contacted. These efforts were still classified as a census because all employers of former students meeting the criteria were contacted and a statistical sampling procedure was not used. In four cases it could not be determined from available information whether the survey was a census or if a sample had been used.

Table 25

Nature of Employer Follow-Up (n=29)

Census	Sample	Not Specified
22	3	4

Eleven of the 29 reports indicated some factor had been used to determine which employers to contact. Three reports indicated that only those employers of former students who were working in occupations related to their training were contacted. Seven cases were identified in which the former student's permission to contact their employer was a factor in the selection of the employer sample. One report indicated that an employer was contacted only if the former student gave permission and was employed full-time. Only one of the seven efforts reporting that student permission was a factor in determining who would be contacted was conducted before 1975. Permission to contact employers can be expected to become more important in light of recent restrictions on the collection and use of information.

The rate of return obtained in employer follow-up efforts was considerably higher than for student follow-up efforts, the median return rate being 70 percent. Table 26 indicates that only three of the nineteen studies for which a return rate could be determined obtained less than a 50 percent return. Two studies were found to report return rates of 100 percent and seven reported returns of 80 percent or higher. The lowest return rate reported for an employer follow-up was 11 percent. Ten reports did not provide sufficient data to allow the calculation of a rate of return.

Table 26

Percentage Return Rate for Employer Follow-Up Efforts (n=29)

0 to 25	26 to 50	51 to 75	76 to 100	Impossible to Determine
1	2	9	7	10

While the use of incentives to elicit returns was not wide-spread in student follow-up efforts, no cases of their use in employer follow-up efforts could be identified. In six instances it was not specified whether or not incentives had been used.

The most common source of the employer's mailing address was the former student. A combination of sources such as teachers or parents were sometimes utilized if information could not be obtained from the former student. In three cases the primary source of the employer's address was an individual other than the former student, a teacher, or parent. In two of those instances addresses were gathered from agencies former students had used to obtain employment.

Table 27 shows that the mail-out questionnaire was the method used most often to collect data from employers. This method was also used most frequently during second or third attempts to collect data from employers not responding to the initial contact. While second attempts to collect information were made in approximately 70 percent of the student follow-up efforts, second attempts at data collection were made in few than 50 percent of the employer follow-up efforts. Third attempts to collect data were made in less than 20 percent of the employer follow-up studies reviewed.

Table 27

Methods Used to Collect Employer Follow-Up Data (n=29)

	Q	TI	PI	QTI	NS	NA
First Attempt	18	4	3	1	3	0
Second Attempt	5	2	1	0	6	15
Third Attempt	3	1	0	0	6	19

Key

Q-Questionnaire
TI-Telephone Interview
PI-Personal Interview
NS-Not Specified
NA-No Attempt Made
QTI-Questionnaire and Telephone Interview

The amount of time allowed to elapse before making a second or third data collection attempt was generally less than three weeks. However, as Table 28 indicates, in the majority of cases either no second or third attempt was made or the number of days between attempts was not specified. In several instances where a seemingly long period was allowed to elapse, prompts were used between actual data collection attempts.

Table 28

Number of Days Elapsed Between Attempts to Collect Employer Data (n=29)

	10	14	17	21	45	Not Spec.	No Attempt
Before 2nd Attempt	0	2	1	1	1	9	15
Before 3rd Attempt	1	1	0	1	0		19

Table 29 summarizes the use of prompts in employer follow-up efforts. Only six instances of the use of prompts to encourage the cooperation of employers in providing data could be documented. A card or telephone call was used in five cases.

Table 29

Types of Prompts Used to Elicit Response (n=29)

Letter	Card	Telephone Call	Not Spec. or Unclear	None Used
1	3	2	5	18

No longitudinal employer follow-up efforts were found among those reviewed. However, several system manuals or guides were found that proposed employer follow-up in longitudinal student follow-up efforts. None of the reports of employer follow-up provided cost data.

Summary - The review of available literature resulted in the discovery of 139 documents published after 1969 which could be classified as reports of follow-up studies. Of these, 126 described efforts focusing on the follow-up of students or both students and their employers. Twenty-nine reports were identified which were concerned with the follow-up of employers. Most of the follow-up efforts sought to obtain information about former students of secondary or post-secondary programs.

Evaluation was the most commonly stated or implied objective for conducting follow-up. Financial support for the majority of the follow-up efforts was provided by a state agency. Most often the data reported were focused primarily at the state level. Additionally, although localities were often responsible for collecting student data, the reports were most often prepared by other individuals. These facts suggest that compliance with the federal and state reporting requirements was a major but not generally stated, objective of many efforts.

The majority of student follow-ups used a census approach, that is, an attempt was made to contact every former student. The same held true for employer follow-up although in many instances only the employers of students in specific categories were contacted. The mail-out questionnaire was the most common method of collecting data from both former students and their employers. Although the use of prompts and incentives was less common in the follow-up of employers than of former students, employer follow-up efforts generally reported higher return rates.

Several shortcomings were found to exist in the majority of studies reviewed. Only eight follow-up reports were found to include information about the cost of conducting the study. Longitudinal follow-up efforts are rare. Data regarding non-respondents is generally not available nor sought. Information describing the exact procedure used to collect data and who was contacted are often incomplete. Although it is expected that many localities conduct some type of follow-ups, little information about these efforts is readily available.

Specific Characteristics of Reviewed Studies

Tables 30 and 31 present a detailed summary of selected characteristics of the follow-up studies reviewed. Each study's bibliographic reference number is listed at the top. The specific characteristics of any particular follow-up study are indicated by the "X"s below the reference number. It is thus possible to identify major characteristics of a particular referenced study or to identify all studies which had a particular characteristic. In a number of cases, it was impossible to determine all characteristics of a given study from the information provided. Classification is some cases was based on the judgement of the reviewer.

TABLE 30

STUDENT FOLLOW-UP CHARACTERISTICS

	REFERENCE											
CHARACTERISTICS	1	6	7	9	11	14	15	16	17	18	19	20
I. LEVEL												
A. SECONDARY	X	X			X	X						X
B. POST SECONDARY						X	X	X		X	X	
C. ADULT												
D. SPECIAL GROUPS			X	X	X	X						
II. STATUS												
A. COMPLETION		X		X	X	X	X		X		X	X
B. NONCOMPLETION						X		X				
III. METHOD												
A. QUESTIONNAIRE	X			X	X		X	X	X		X	X
B. TELEPHONE INTERVIEW											X	
C. INTERVIEW			X		X	X						
D. OTHER												
IV. HOW												
A. CENSUS		X					X	X	X	X	X	X
B. SAMPLE	X			X	X	X						
V. WHEN												
A. WITHIN ONE YEAR	X		X				X	X			X	
B. AFTER ONE YEAR				X								
VI. OBJECTIVES												
A. COMPLIANCE/REPORTING											X	
B. PLANNING					X		X	X	X	X		
C. EVALUATION	X	X		X		X	X	X	X			
D. OTHER			X									
VII. NONRESPONSE ANALYSIS												
VIII. PROMPTS/INCENTIVES	X		X					X				
IX. LONGITUDINAL STUDY												
X. COST DATA RECORDED												

TABLE 30

STUDENT FOLLOW-UP CHARACTERISTICS

	REFERENCE											
CHARACTERISTICS	21	22	24	25	26	30	31	33	35	37	38	39
I. LEVEL												
A. SECONDARY	X	X			X	X	X		X	X		X
B. POST SECONDARY			X				X	X				
C. ADULT							X				X	
D. SPECIAL GROUPS				X								
II. STATUS	X	X	X	X	X	X	X	X	X	X	X	X
A. COMPLETION					X		X	X				
B. NONCOMPLETION												
III. METHOD												
A. QUESTIONNAIRE		X	X		X		X	X	X		X	X
B. TELEPHONE INTERVIEW			X		X	X		X			X	
C. INTERVIEW	X			X				X			X	
D. OTHER												
IV. HOW												
A. CENSUS		X	X				X	X			X	X
B. SAMPLE	X			X	X	X	X		X	X		X
V. WHEN												
A. WITHIN ONE YEAR		X	X		X		X		X			X
B. AFTER ONE YEAR	X		X						X	X	X	
VI. OBJECTIVES												
A. COMPLIANCE/REPORTING					X		X					X
B. PLANNING		X	X	X	X	X	X	X		X		X
C. EVALUATION		X	X	X	X	X	X	X	X	X	X	X
D. OTHER	X					X	X					
VII. NONRESPONSE ANALYSIS												
VIII. PROMPTS/INCENTIVES				X	X		X				X	
IX. LONGITUDINAL STUDY												
X. COST DATA RECORDED					X							

TABLE 30

STUDENT FOLLOW-UP CHARACTERISTICS

	REFERENCE											
CHARACTERISTICS	40	42	43	44	46	52	53	54	56	60	62	
I. LEVEL												
A. SECONDARY	X		X	X		X				X		
B. POST SECONDARY		X					X	X	X		X	
C. ADULT	X											
D. SPECIAL GROUPS					X							
II. STATUS												
A. COMPLETION	X	X	X	X		X	X	X	X	X	X	
B. NONCOMPLETION		X		X		X				X		
III. METHOD												
A. QUESTIONNAIRE	X	X	X	X		X	X	X	X			
B. TELEPHONE INTERVIEW												
C. INTERVIEW					X					X		
D. OTHER			X									
IV. HOW												
A. CENSUS	X	X	X	X	X	X	X	X	X			
B. SAMPLE	X									X	X	
V. WHEN												
A. WITHIN ONE YEAR	X	X		X	X		X	X				
B. AFTER ONE YEAR			X			X	X	X			X	
VI. OBJECTIVES												
A. COMPLIANCE/REPORTING	X					X						
B. PLANNING	X	X		X			X	X	X			
C. EVALUATION		X	X	X		X	X	X	X	X	X	
D. OTHER			X		X		X	X	X		X	
VII. NONRESPONSE ANALYSIS					X							
VIII. PROMPTS/INCENTIVES			X									
IX. LONGITUDINAL STUDY						X						
X. COST DATA RECORDED						X						

TABLE 30

STUDENT FOLLOW-UP CHARACTERISTICS

	REFERENCE										
CHARACTERISTICS	66	67	68	70	73	74	75	77	78	79	80
I. LEVEL											
A. SECONDARY			X	X	X						
B. POST SECONDARY	X	X					X	X	X	X	X
C. ADULT						X					
D. SPECIAL GROUPS						X					
II. STATUS											
A. COMPLETION	X		X	X	X		X	X	X	X	X
B. NONCOMPLETION		X			X		X		X	X	X
III. METHOD											
A. QUESTIONNAIRE	X	X			X		X	X	X	X	X
B. TELEPHONE INTERVIEW		X			X		X				X
C. INTERVIEW						X		X	X		
D. OTHER											
IV. HOW											
A. CENSUS	X	X			X	X	X	X			
B. SAMPLE			X		X				X	X	X
V. WHEN											
A. WITHIN ONE YEAR					X			X			
B. AFTER ONE YEAR	X	X		X	X			X		X	
VI. OBJECTIVES											
A. COMPLIANCE/REPORTING									X		
B. PLANNING	X	X				X	X	X			
C. EVALUATION	X			X	X		X	X	X		
D. OTHER	X		X	X		X	X			X	X
VII. NONRESPONSE ANALYSIS				X			X			X	
VIII. PROMPTS/INCENTIVES		X			X	X	X		X	X	X
IX. LONGITUDINAL STUDY			X								
X. COST DATA RECORDED		X									

TABLE 30

STUDENT FOLLOW-UP CHARACTERISTICS

	REFERENCE										
CHARACTERISTICS	81	83	86	89	95	96	97	98	100	103	106	
I. LEVEL												
A. SECONDARY			X		X	X	X	X	X	X		
B. POST SECONDARY		X		X	X						X	
C. ADULT	X											
D. SPECIAL GROUPS		X										
II. STATUS	X	X	X	X	X	X	X	X	X	X	X	
A. COMPLETION	X	X		X	X	X	X	X	X	X		
B. NONCOMPLETION												
III. METHOD												
A. QUESTIONNAIRE	X		X	X	X	X	X	X	X	X	X	
B. TELEPHONE INTERVIEW			X			X	X	X	X	X		
C. INTERVIEW	X	X							X			
D. OTHER												
IV. HOW												
A. CENSUS	X		X		X	X	X	X	X	X	X	
B. SAMPLE		X		X								
V. WHEN												
A. WITHIN ONE YEAR			X	X	X	X	X	X		X	X	
B. AFTER ONE YEAR								X	X		X	
VI. OBJECTIVES												
A. COMPLIANCE/REPORTING						X	X			X		
B. PLANNING	X		X	X	X	X	X	X		X		
C. EVALUATION	X		X	X	X	X	X	X			X	
D. OTHER		X	X						X	X		
VII. NONRESPONSE ANALYSIS			X									
VIII. PROMPTS/INCENTIVES			X	X		X	X		X	X		
IX. LONGITUDINAL STUDY			X									
X. COST DATA RECORDED				X								

TABLE 30

STUDENT FOLLOW-UP CHARACTERISTICS

	REFERENCE											
CHARACTERISTICS	107	108	109	112	114	117	118	120	121	122	124	
I. LEVEL												
A. SECONDARY				X		X	X	X	X		X	
B. POST SECONDARY	X	X			X	X	X			X	X	
C. ADULT						X					X	
D. SPECIAL GROUPS			X									
II. STATUS												
A. COMPLETION	X		X		X	X	X	X	X	X	X	
B. NONCOMPLETION		X							X	X		
III. METHOD												
A. QUESTIONNAIRE	X	X	X	X	X	X	X	X	X	X	X	
B. TELEPHONE INTERVIEW		X		X	X		X		X			
C. INTERVIEW									X			
D. OTHER												
IV. HOW												
A. CENSUS	X	X	X	X	X	X				X		
B. SAMPLE								X	X		X	
V. WHEN												
A. WITHIN ONE YEAR				X		X	X		X			
B. AFTER ONE YEAR								X	X		X	
VI. OBJECTIVES												
A. COMPLIANCE/REPORTING						X	X			X		
B. PLANNING		X	X	X	X		X			X		
C. EVALUATION		X	X	X	X		X	X	X	X	X	
D. OTHER	X			X					X			
VII. NONRESPONSE ANALYSIS					X						X	
VIII. PROMPTS/INCENTIVES	X			X						X	X	
IX. LONGITUDINAL STUDY				X						X		
X. COST DATA RECORDED												

TABLE 30

STUDENT FOLLOW-UP CHARACTERISTICS

CHARACTERISTICS	REFERENCE											
	125	126	127	128	133	134	137	144	145	147	148	149
I. LEVEL												
A. SECONDARY	X			X	X	X	X		X	X	X	X
B. POST SECONDARY		X	X	X			X		X			X
C. ADULT								X				X
D. SPECIAL GROUPS	X											
II. STATUS												
A. COMPLETION		X		X	X	X	X	X	X	X	X	X
B. NONCOMPLETION			X	X							X	
III. METHOD												
A. QUESTIONNAIRE	X	X	X	X	X	X	X	X		X		X
B. TELEPHONE INTERVIEW		X				X	X					X
C. INTERVIEW	X											
D. OTHER												
IV. HOW												
A. CENSUS	X	X		X	X	X	X		X		X	X
B. SAMPLE			X					X		X		
V. WHEN												
A. WITHIN ONE YEAR		X				X				X		X
B. AFTER ONE YEAR	X		X	X			X					
VI. OBJECTIVES												
A. COMPLIANCE/REPORTING					X	X						X
B. PLANNING			X	X		X	X			X		X
C. EVALUATION			X	X		X	X	X	X	X		X
D. OTHER	X										X	
VII. NONRESPONSE ANALYSIS												
VIII. PROMPTS/INCENTIVES		X	X			X	X	X				X
IX. LONGITUDINAL STUDY												X
X. COST DATA RECORDED												

TABLE 30

STUDENT FOLLOW-UP CHARACTERISTICS

	REFERENCE											
CHARACTERISTICS	150	151	152	154	155	156	157	161	164	165	166	
I. LEVEL												
A. SECONDARY							X	X	X	X	X	
B. POST SECONDARY	X	X	X	X	X		X					
C. ADULT							X		X	X		
D. SPECIAL GROUPS						X						
II. STATUS												
A. COMPLETION	X	X	X	X	X	X	X	X	X	X		
B. NONCOMPLETION	X	X				X	X		X		X	
III. METHOD												
A. QUESTIONNAIRE	X	X	X	X	X		X	X	X	X	X	
B. TELEPHONE INTERVIEW												
C. INTERVIEW	X					X						
D. OTHER												
IV. HOW												
A. CENSUS			X	X	X		X	X	X	X		
B. SAMPLE	X	X				X					X	
V. WHEN												
A. WITHIN ONE YEAR				X	X	X	X		X	X		
B. AFTER ONE YEAR	X	X	X		X							
VI. OBJECTIVES												
A. COMPLIANCE/REPORTING			X		X		X	X	X	X		
B. PLANNING				X	X	X	X		X	X	X	
C. EVALUATION			X	X	X	X	X		X	X	X	
D. OTHER	X	X										
VII. NONRESPONSE ANALYSIS							X			X		
VIII. PROMPTS/INCENTIVES		X	X	X			X		X	X		
IX. LONGITUDINAL STUDY												
X. COST DATA RECORDED							X					

TABLE 30

STUDENT FOLLOW-UP CHARACTERISTICS

	REFERENCE											
CHARACTERISTICS	170	172	174	175	176	177	178	179	185	187		
I. LEVEL												
A. SECONDARY			X	X	X		X			X		
B. POST SECONDARY	X	X				X		X				
C. ADULT												
D. SPECIAL GROUPS									X			
II. STATUS												
A. COMPLETION	X	X	X	X	X	X	X	X	X	X		
B. NONCOMPLETION	X	X		X	X		X	X				
III. METHOD												
A. QUESTIONNAIRE	X	X	X	X		X	X	X	X	X		
B. TELEPHONE INTERVIEW							X					
C. INTERVIEW			X		X							
D. OTHER												
IV. HOW												
A. CENSUS	X	X	X	X	X	X	X		X			
B. SAMPLE								X				
V. WHEN												
A. WITHIN ONE YEAR	X	X		X		X						
B. AFTER ONE YEAR			X		X		X	X				
VI. OBJECTIVES												
A. COMPLIANCE/REPORTING	X		X	X			X	X				
B. PLANNING	X	X	X	X			X					
C. EVALUATION	X	X		X		X	X	X	X			
D. OTHER		X	X	X	X			X	X			
VII. NONRESPONSE ANALYSIS				X	X							
VIII. PROMPTS/INCENTIVES	X			X				X				
IX. LONGITUDINAL STUDY				X								
X. COST DATA RECORDED									X			

TABLE 30

STUDENT FOLLOW-UP CHARACTERISTICS

	REFERENCE											
CHARACTERISTICS	183	190	191	193	194	198	201	202	203	204		
I. LEVEL												
A. SECONDARY			X	X	X		X		X	X		
B. POST SECONDARY	X	X	X	X		X	X	X	X	X		
C. ADULT				X			X					
D. SPECIAL GROUPS												
II. STATUS												
A. COMPLETION	X	X	X	X	X	X	X	X	X	X		
B. NONCOMPLETION					X							
III. METHOD												
A. QUESTIONNAIRE	X	X	X	X	X	X		X	X	X		
B. TELEPHONE INTERVIEW				X					X			
C. INTERVIEW												
D. OTHER												
IV. HOW												
A. CENSUS	X	X		X		X			X	X		
B. SAMPLE					X			X				
V. WHEN												
A. WITHIN ONE YEAR		X	X	X	X	X	X					
B. AFTER ONE YEAR	X	X		X						X		
VI. OBJECTIVES												
A. COMPLIANCE/REPORTING				X		X	X			X		
B. PLANNING	X	X		X	X	X		X	X			
C. EVALUATION	X	X		X	X	X		X	X			
D. OTHER			X						X			
VII. NONRESPONSE ANALYSIS					X							
VIII. PROMPTS/INCENTIVES			X	X	X							
IX. LONGITUDINAL STUDY				X								
X. COST DATA RECORDED												

TABLE 30

STUDENT FOLLOW-UP CHARACTERISTICS

	REFERENCE											
CHARACTERISTICS	209	210	211	212	213	215	218	220	224	225		
I. LEVEL												
A. SECONDARY								X	X	X		
B. POST SECONDARY	X	X	X	X	X	X	X					
C. ADULT												
D. SPECIAL GROUPS						X						
II. STATUS												
A. COMPLETION				X	X		X	X	X	X		
B. NONCOMPLETION	X	X	X				X		X	X		
III. METHOD												
A. QUESTIONNAIRE	X	X	X	X	X	X	X		X	X		
B. TELEPHONE INTERVIEW												
C. INTERVIEW												
D. OTHER												
IV. HOW												
A. CENSUS	X	X	X	X	X	X	X		X	X		
B. SAMPLE									X	X		
V. WHEN												
A. WITHIN ONE YEAR		X						X	X	X		
B. AFTER ONE YEAR							X					
VI. OBJECTIVES												
A. COMPLIANCE/REPORTING	X	X	X	X	X	X		X		X		
B. PLANNING		X	X	X	X	X	X		X	X		
C. EVALUATION		X	X	X	X	X	X		X	X		
D. OTHER												
VII. NONRESPONSE ANALYSIS							X					
VIII. PROMPTS/INCENTIVES									X			
IX. LONGITUDINAL STUDY												
X. COST DATA RECORDED												

Table 30

STUDENT FOLLOW-UP CHARACTERISTICS

	REFERENCE											
CHARACTERISTICS	229	231	232	234	236	28	131					
I. LEVEL												
A. Secondary			X				X					
B. Post Secondary	X	X	X	X								
C. Adult			X									
D. Special Groups			X		X	X						
II. STATUS												
A. Completion	X	X	X	X	X	X	X					
B. Noncompletion		X		X		X						
III. METHOD												
A. Questionnaire	X	X	X	X		X	X					
B. Telephone Interview		X	X			X						
C. Interview			X		X							
D. Other												
IV. HOW												
A. Census	X	X	X	X		X	X					
B. Sample					X							
V. WHEN												
A. Within one year		X	X	X								
B. After one year	X											
VI. OBJECTIVES												
A. Compliance/Reporting	X		X			X						
B. Planning	X			X	X	X	X					
C. Evaluation	X	X			X	X	X					
D. Other				X								
VII. NONRESPONSE ANALYSIS												
VIII. PROMPTS/INCENTIVES	X	X			X	X						
IX. LONGITUDINAL STUDY												
X. COST DATA RECORDED												

TABLE 31

EMPLOYER FOLLOW-UP CHARACTERISTICS

	REFERENCE											
CHARACTERISTICS	1	10	11	21	31	33	42	43	57	73	76	100
I. LEVEL												
A. SECONDARY	X		X	X	X			X		X	X	X
B. POST SECONDARY					X	X	X		X			
C. ADULT					X							
II. COMPLETION STATUS												
A. COMPLETERS		X	X	X	X	X	X	X	X	X	X	X
B. NON-COMPLETERS					X	X	X			X		X
C. SPECIAL GROUPS			X									
III. WHO.												
A. ALL EMPLOYEES			X	X	X	X	X	X	X			X
B. SURVEY OF EMPLOYER GROUPS	X	X								X		
IV. HOW												
A. CENSUS	X				X	X	X	X	X			X
B. SAMPLE		X	X	X								
V. METHOD												
A. QUESTIONNAIRE	X	X	X		X	X	X	X	X	X	X	
B. TELEPHONE INTERVIEW												
C. INTERVIEW			X	X								X
D. OTHER												
VI. PERMISSION OBTAINED					X				X	X		
VII. INCENTIVES USED												
VIII. PROMPTS USED								X		X		X
IX. COST DATA RECORDED												

TABLE 31

EMPLOYER FOLLOW-UP CHARACTERISTICS

CHARACTERISTICS	REFERENCE											
	110	118	121	125	134	144	147	149	155	160	164	168
I. LEVEL												
A. SECONDARY	X	X	X	X	X		X	X			X	
B. POST SECONDARY		X						X	X	X		X
C. ADULT						X		X			X	
II. COMPLETION STATUS												
A. COMPLETERS		X	X		X	X	X	X	X	X	X	X
B. NON-COMPLETERS			X								X	
C. SPECIAL GROUPS				X								
III. WHO.												
A. ALL EMPLOYEES		X		X						X		
B. SURVEY OF EMPLOYER GROUPS	X		X			X	X	X	X		X	X
IV. HOW												
A. CENSUS	X	X				X	X	X	X	X	X	X
B. SAMPLE			X									
V. METHOD												
A. QUESTIONNAIRE	X	X	X		X	X	X	X	X	X	X	X
B. TELEPHONE INTERVIEW												
C. INTERVIEW				X						X		
D. OTHER												
VI. PERMISSION OBTAINED				X							X	X
VII. INCENTIVES USED					X							
VIII. PROMPTS USED					X							X
IX. COST DATA RECORDED												

Table 31

EMPLOYER FOLLOW-UP CHARACTERISTICS

	REFERENCE						
CHARACTERISTICS	170	175	192	193	203	216	229
I. LEVEL							
A. Secondary		X	X	X	X		
B. Post Secondary	X		X	X	X	X	X
C. Adult				X			
II. COMPLETION STATUS							
A. Completers	X	X	X	X	X	X	X
B. Non-Completers	X	X					
C. Special Groups							
III. WHO.							
A. All Employees	X			X	X	X	X
B. Survey of Employer Groups		X	X				
IV. HOW							
A. Census	X	X	X	X	X	X	X
B. Sample							
V. METHOD							
A. Questionnaire	X	X		X	X		
B. Telephone Interview			X	X			
C. Interview							
D. Other							
VI. PERMISSION OBTAINED							X
VII. INCENTIVES USED							
VIII. PROMPTS USED	X		X	X			
IX. COST DATA RECORDED							

Review of Follow-up Instruments

Previous sections have provided a descriptive summary of methodological elements in both follow-up reports and manuals. While the primary focus of the review is follow-up methodology, what data are being collected is often of interest to developers of follow-up systems.

Many of the reports and manuals reviewed by the project included the actual data collection instruments. Those instruments which seemed most relevant to the present study were reviewed and are summarized in the tables which follow. The basic organizational structure for the tables is adapted from Pucel (170). Since specific data items within data elements varied among instruments, the tables summarize only the more common data elements. Also, questions asked about specific school services, job changes, specific work habits of the employee and the like were too numerous or situation specific to be tabled.

Overview of instruments - The instruments reviewed were fairly consistant in terms of data elements included. This was especially true in the case of employer follow-up instruments. A few elements were conspicuous either because of their almost universal inclusion or their widespread omission. The number and percent of the reviewed instruments which included one or more questions within each of the data elements tabled are listed in Tables 32 and 33.

Detailed review - Tables 34 and 35 present a summary of the data elements included in each of the instruments reviewed. Each instrument's bibliographic reference number is listed at the top. A "X" is located in the column beneath a particular instrument for each of the selected data elements determined to be included in that instrument by the review procedures. A particular data element was indicated if an instrument contained one or more items related to that element. In some cases, reviewer judgement was necessary to classify items under one of the selected data element titles.

The layout of Tables 34 and 35 is such that the selected data elements included in a particular instrument may be identified. Also, all reviewed instruments which included a particular data element may be located.

Table 32

Number and Percent of the Student Follow-Up Instruments Reviewed Which Included Questions on Selected Data Elements
N=56

Data Elements	No.	Percent
Additional Education/Training Since Program	38	68
Employed/Unemployed/Unavailable for Employment	53	95
Job Title/Duties	40	71
Present Employer/Address/Supervisor	32	57
Why Unavailable or Unemployed	25	45
Relatedness of Job to Training Program	46	82
Reason for Unrelated Employment	17	30
Salary/Wages-Present Job	36	64
Present Job Full/Part Time	36	64
How was Job Obtained	27	48
Permission to Contact Employer	4	7
Number of Jobs Held and/or Employers' Names/Addresses	22	39
Length of Employment	10	18
Advancement	6	11
Address in Future	3	5
Satisfaction-Salary/Wages/Benefits	8	14
Overall Satisfaction with Job	13	23
Satisfaction with Specific Job Aspects	12	21
Overall Rating of Training	33	59
Rating of Curriculum	25	45
Rating of Facilities/Equip.	22	39
Rating of Instruction	26	46
Rating of School Services	25	45
Objective for Entering Program	7	13

Table 33

Number and Percent of the Employer Follow-Up Instruments Reviewed Which Included Questions on Selected Data Elements
N=19

Data Elements*	No.	Percent
Quality of Work	16	84
Quantity of Work	14	74
Job Related Technical Knowledge	13	68
Job Skills	10	53
Operation of Tools and Equipment	11	59
Basic Academic Skills	11	59
Work Habits/Attitudes	8	42
Accept Responsibility	10	53
Punctuality	8	42
Supervision Required	10	53
Cooperation With Co-Workers	15	79
Willingness to Learn and Improve	14	74
Cooperate With Management	11	59
Compliance With Rules/Policies	8	42
Attendance	12	63
Overall Satisfactoriness	11	59
Promotability	4	21

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*Data elements refer to the employer's rating of the employee on the characteristic.

Table 34

STUDENT FOLLOW-UP INSTRUMENTS

DATA ELEMENTS	REFERENCE											
	17	23	30	31	34	40	42	43	44	52	54	65
I. EMPLOYMENT/ED. STATUS												
A. Additional Ed./Tng.	X	X	X	X					X	X	X	X
B. Employment Status	X	X	X	X		X	X	X	X	X	X	X
C. Job Title/Duties	X	X	X		X	X	X	X	X		X	
D. Employer/Supervisor Add.		X				X	X	X			X	
E. Why Unavailable/Unemployed		X	X				X	X		X		
F. Job Relatedness	X	X			X	X	X	X	X	X	X	X
G. Why Unrelated Employment					X	X		X	X			
H. Present Salary/Wage	X	X			X	X	X		X	X	X	X
I. Employed Full/Part Time		X	X	X		X		X	X	X		X
J. How Job Obtained	X			X		X						X
K. OK to Contact Employer												
II. WORK HISTORY												
A. No. of Jobs/Employers						X				X		X
B. Length Employment										X		
C. Advancement							X					
III. JOB SATISFACTION												
A. Salary/Wages/Benefits									X			
B. Overall						X	X	X				
C. Specific Job Aspects								X	X			
IV. EVALUATION OF TNG. PROGRAM												
A. Overall Rating of Tng.	X	X			X	X		X		X		X
B. Curriculum	X				X			X			X	X
C. Facilities & Equipment				X	X	X		X		X		
D. Instruction				X	X	X	X			X		
E. School Services				X		X		X	X	X		
V. OTHER												
A. Objectives for Entering												
B. Address in Future												

Table 34

STUDENT FOLLOW-UP INSTRUMENTS

DATA ELEMENTS	REFERENCE											
	76	77	87	89	99	100	101	118	122	126	127	128
I. EMPLOYMENT/ED. STATUS												
A. Additional Ed./Tng.	X	X	X		X	X	X	X	X	X		X
B. Employment Status	X	X	X	X	X	X	X	X	X	X	X	X
C. Job Title/Duties	X	X	X	X	X	X	X	X	X		X	X
D. Employer/Supervisor Add.	X	X		X	X	X	X	X	X		X	X
E. Why Unavailable/Unemployed	X				X	X	X	X			X	
F. Job Relatedness	X	X	X	X	X	X	X			X	X	
G. Why Unrelated Employment		X	X						X			X
H. Present Salary/Wage	X		X	X	X	X	X	X		X	X	X
I. Employed Full/Part Time	X		X	X	X	X	X		X			X
J. How Job Obtained			X							X	X	
K. OK to Contact Employer							X					
II. WORK HISTORY												
A. No. of Jobs/Employers	X				X	X	X				X	X
B. Length Employment					X	X	X				X	
C. Advancement						X	X					
III. JOB SATISFACTION												
A. Salary/Wages/Benefits						X			X			
B. Overall						X	X				X	
C. Specific Job Aspects						X	X		X			
IV. EVALUATION OF TNG. PROGRAM												
A. Overall Rating of Tng.		X	X			X	X		X	X	X	X
B. Curriculum		X	X			X	X		X	X	X	
C. Facilities & Equipment		X				X			X		X	
D. Instruction		X		X		X	X		X	X	X	
E. School Services		X		X		X	X		X	X	X	
V. OTHER												
A. Objectives for Entering				X					X		X	
B. Address in Future										X		

Table 34

STUDENT FOLLOW-UP INSTRUMENTS

	REFERENCE											
DATA ELEMENTS	133	134	137	140	144	147	149	152	161	162	164	170
I. EMPLOYMENT/ED. STATUS												
A. Additional Ed. Tng.	X	X	X			X	X	X	X		X	X
B. Employment Status	X	X	X	X	X	X	X	X	X	X	X	X
C. Job Title/Duties			X	X	X	X		X			X	X
D. Employer/Supervisor Add.		X	X		X	X		X			X	X
E. Why Unavailable/Unemployed	X	X	X		X			X		X		X
F. Job Relatedness	X	X	X	X			X	X		X	X	X
G. Why Unrelated Employment			X					X				
H. Present Salary/Wage		X		X					X	X	X	X
I. Employed Full/Part Time				X		X		X	X			X
J. How Job Obtained		X	X	X	X	X		X	X		X	
K. OK to Contact Employer		X									X	
II. WORK HISTORY												
A. No. of Jobs/Employers	X	X						X			X	X
B. Length Employment	X					X						X
C. Advancement												X
III. JOB SATISFACTION												
A. Salary/Wages/Benefits									X			X
B. Overall			X									X
C. Specific Job Aspects			X						X			X
IV. EVALUATION OF TNG. PROGRAM												
A. Overall Rating of Tng.		X	X	X	X	X				X		X
B. Curriculum				X	X	X						X
C. Facilities & Equipment			X	X	X	X						X
D. Instruction	X		X	X		X						X
E. School Services			X	X	X	X						X
V. OTHER												
A. Objectives for Entering												
B. Address in Future												

Table 34

STUDENT FOLLOW-UP INSTRUMENTS

	REFERENCE											
DATA ELEMENTS	175	175	178	182	186	188	190	193	194	203	204	207
I. EMPLOYMENT/ED. STATUS												
A. Additional Ed. Tng.	X		X	X		X	X		X		X	
B. Employment Status	X	X	X	X	X	X	X	X	X		X	X
C. Job Title/Duties	X	X	X	X		X	X	X			X	X
D. Employer/Supervisor Add.	X		X			X	X	X		X	X	X
E. Why Unavailable/Unemployed	X				X	X		X			X	X
F. Job Relatedness	X		X	X		X	X	X	X	X	X	X
G. Why Unrelated Employment		X	X	X						X	X	
H. Present Salary/Wage				X	X	X			X	X	X	X
I. Employed Full/Part Time			X	X	X	X		X	X	X	X	X
J. How Job Obtained		X		X	X		X		X	X	X	
K. OK to Contact Employer												
II. WORK HISTORY												
A. No. of Jobs/Employers		X	X		X		X		X	X	X	
B. Length Employment			X				X					
C. Advancement							X				X	
III. JOB SATISFACTION												
A. Salary/Wages/Benefits											X	
B. Overall									X	X	X	
C. Specific Job Aspects											X	X
IV. EVALUATION OF TNG. PROGRAM												
A. Overall Rating of Tng.		X		X	X	X	X	X		X		X
B. Curriculum						X	X	X		X	X	X
C. Facilities & Equipment								X	X	X	X	
D. Instruction			X					X	X	X	X	
E. School Services			X	X				X	X			
V. OTHER												
A. Objectives for Entering									X			
B. Address in Future	X											

Table 34

STUDENT FOLLOW-UP INSTRUMENTS

	REFERENCE											
DATA ELEMENTS	214	217	218	226	229	231						
I. EMPLOYMENT/ED. STATUS												
A. Additional Ed. Tng.	X	X		X		X						
B. Employment Status	X	X		X	X	X						
C. Job Title/Duties	X		X		X							
D. Employer/Supervisor Add.			X		X							
E. Why Unavailable/Unemployed						X						
F. Job Relatedness	X	X	X	X	X	X						
G. Why Unrelated Employment	X				X							
H. Present Salary/Wage	X	X	X									
I. Employed Full/Part Time			X	X	X	X						
J. How Job Obtained		X	X	X	X							
K. Ok to Contact Employer			X									
II. WORK HISTORY												
A. No. of Jobs/Employers												
B. Length Employment			X									
C. Advancement												
III. JOB SATISFACTION												
A. Salary/Wages/Benefits		X	X									
B. Overall		X										
C. Specific Job Aspects		X	X									
IV. EVALUATION OF TNG. PROGRAM												
A. Overall Rating of Tng.	X	X	X									
B. Curriculum	X	X	X									
C. Facilities & Equipment		X	X		X							
D. Instruction		X	X		X							
E. School Services	X	X	X									
V. OTHER												
A. Objectives for Entering	X	X	X									
B. Address in Future												

Table 35

EMPLOYER FOLLOW-UP INSTRUMENTS

	REFERENCE											
DATA ELEMENTS	42	43	57	76	95	110	118	134	138	144	147	160
I. EMPLOYEE KNOWLEDGE												
A. Quality of Work	X	X	X	X	X	X	X	X	X	X	X	
B. Quantity of Work	X	X		X	X	X	X	X	X	X	X	
C. Job Related Tech. Knowledge	X	X	X		X	X	X					
D. Job Skills		X	X	X	X	X	X	X				
E. Operation Tools & Equipment		X	X	X		X	X					X
F. Basic Academic Skills				X	X	X	X					X
G. Work Habits/Attitudes		X	X		X	X					X	
II. EMPLOYEE CHARACTERISTICS												
A. Accept Responsibility					X		X			X	X	
B. Punctuality					X		X		X			
C. Supervision Required		X		X	X		X			X	X	
D. Cooperation with co-workers	X		X	X			X	X	X	X	X	X
E. Willingness to learn/improve	X	X		X			X	X	X	X	X	X
F. Cooperate with Management					X		X	X	X	X	X	X
G. Compliance rules/policies							X		X	X	X	
H. Attendance		X		X	X		X		X	X	X	
III. SATISFACTORINESS												
A. Overall Satisfactoriness	X	X					X			X	X	
B. Promotability			X					X				

Table 35

EMPLOYER FOLLOW-UP INSTRUMENTS

	REFERENCE						
DATA ELEMENTS	168	170	175	192	193	203	216
I. EMPLOYEE KNOWLEDGE							
A. Quality of Work		X	X	X	X		X
B. Quantity of Work		X	X		X		X
C. Job Related Tech. Knowledge	X	X	X	X	X	X	X
D. Job Skills	X			X	X		
E. Operation Tools & Equipment	X	X	X		X		X
F. Basic Academic Skills	X	X	X	X	X		X
G. Work Habits/Attitudes	X			X			X
II. EMPLOYEE CHARACTERISTICS							
A. Accept Responsibility	X	X	X		X	X	X
B. Punctuality	X	X	X		X		X
C. Supervision Required	X	X	X		X		
D. Cooperation with co-workers	X	X	X	X	X		X
E. Willingness to learn/improve	X	X	X		X		X
F. Cooperate with Management		X	X		X		X
G. Compliance rules/policies		X	X		X		X
H. Attendance	X	X	X		X		X
III. SATISFACTORINESS							
A. Overall Satisfactoriness		X	X	X	X	X	X
B. Promotability						X	X

Review of Goals and Objectives

It was assumed that the development of a system as complex as the follow-up of former students and their employers would begin with a careful derivation of goals. Many of the reports, guides and manuals reviewed in the present effort did not support that assumption. While certain general purposes may be inferred from the population surveyed and types of data collected, only a small percentage of the documents reviewed included a clear statement of goals or objectives. These have served as the primary information source for the following discussion.

Derivation of goals and objectives - Informal or non-systematized information processes have often developed within organizations to supply data needed for management decisions and legal compliance. One often finds that some data which are collected are not used, redundant data are collected and important data are unavailable when needed. The reliability of information collected through non-systematic procedures is generally unknown. A beginning point in the elimination of these and related problems is the development of system goals/objectives. Lightfield (131) summarizes two global approaches:

1. To decide on the outcome measure and then let the measures define the educational goals. The result of what may be judged as a backward process, is a convenient measure that seems relevant but which may not adequately reflect the goals.

2. A more desirable procedure is to first determine goals through committee deliberations, faculty and staff surveys, or other means and then seek to identify appropriate measures. A limitation of this second approach, however, is that if the goals are developed in the absence of considerations of what is measurable, they likely will be vague statements without measurable content.

Lightfield provides an excellent example of the application of the second approach in the design of a student follow-up system in higher education (122). The college wide goals of Mercer County Community College were interpreted through the development of indicators of goal attainment. These indicators in turn were used as the basis for development of follow-up survey items.

Pucel provides insight into what may seem obvious but apparently is often overlooked. "Therefore, in planning any information system one should start with those people who have to make decisions for action" (170, p. 8). He depicts the primary function of such a system as one of memory. What the system is to "remember" however, may develop informally or through more efficient planned procedures.

An example of a very systematic approach to the utilization of information users in the development of system characteristics/goals is Project Follow-Up which developed the Texas Student Follow-Up Management Information System (243). A DELPHI approach was used with a statewide group of raters. This approach resulted in the derivation of guiding parameters for each of the sub-systems in the total TEX-SIS system.

Several studies specified design criteria, intended outcomes of the follow-up system or both in lieu of system goals or objectives. A few studies used such criteria or system outcomes to add specificity to broadly stated goals or purposes. Two examples of such criteria are provided by the Student Accountability Model (SAM) of the California Community College System (64) and the Minnesota Secondary Assessment System (96). Selected excerpts from these sources are listed to illustrate this approach.

- System must provide necessary information for Vocational Education enrollment and follow-up forms with a high level of accuracy and on time. (64)

- System must provide pertinent evaluation and planning information to occupational administrators and faculty. (64)

- Provide information useful in assisting local school personnel in planning and evaluation. (96)

While it was originally assumed that stated objectives would define some product of the system and design criteria would define the characteristics of the system, such was not always the case.

Examples of goals and objectives - Both stated and implied goals and objectives of student and/or employer follow-up may be classified under one or more of six general headings: (1) compliance/reporting,

(2) evaluation/program improvement, (3) planning, (4) research, (5) evaluation/improvement of the follow-up itself, and (6) others. Data derived from the review of follow-up efforts indicate that the above order is compatible with the frequency with which these goals occur - compliance/reporting goals, often implied rather than stated, being the most common; evaluation/program improvement second, etc. The following are provided as representative examples of statements in current follow-up reports and manuals. The list is not exhaustive and the classification is admittedly judgemental. Few reports actually stated compliance/reporting goals but such could generally be inferred.

Compliance/Reporting

- To provide requisite data for completion of New Jersey HEGIS Form 302 as required by the Department of Higher Education, and other external reports (122)
- To provide information to fulfill placement-related USOE reporting requirements by the states (158)
- Provide valid and reliable "status" information about educational and employment activities of former students (96)

Evaluation/Program Improvement

- Obtain data related to student satisfaction with school services (44)
- To determine from the secondary program graduates their evaluation of the program curriculum, facilities and equipment, instruction, and placement assistance (147)
- To determine from the employers, their evaluation of the secondary student's quality and quantity of work and the student's skills and abilities in the occupations (147)
- To examine the perceptions of students in terms of their evaluation of courses and instructors both within the Division of Technology and outside the Division (53)

- Secure information to improve
  a. Instruction content;
  b. Teaching methods and teaching aids;
  c. Criteria to place students in training programs;
  d. Equipment and supplies; and
  e. Management of institution (175)

- Evaluation of the effectiveness of Program in preparing Graduates for work in terms of their skills, knowledge and attitude (234)

- Provide data to the TEC institutions for local on going evaluation of the effectiveness of programs (89)

- Student success in finding significant employment consistent with their training (89)

- How do they evaluate aspects of their college experience such as instruction, curriculum, facilities, social activities, college environment, and counseling and placement services? (217)

- How do they evaluate their present employment in such matters as salary, nature of their work, relations with co-workers, and opportunity for growth? (217)

- To measure program outcomes by determining current employment status, past year employment, stability, wage levels and job satisfaction of those currently working (14)

- Determine if students felt training helped in level of employment (80)

- Determine if students are satisfied on current job and if they would go through program again (80)

- Gather and report one year follow-up information which can be used to describe the post-graduation activities of Minnesota post high school Area Vocational-Technical Institute full-time day program graduates (170)

- To collect information from the former students about their experiences at the college and about their assessments of the programs and services received (122)

- To determine the satisfaction of the former students with their present employment/educational situation (122)

- To provide information for product evaluation (e.g., percent of graduates placed on jobs, level of salaries and wages earned by graduated, percent who are satisfied on the job, etc.) (158)
- To provide comparable information on graduates from various vocational and technical training programs within a state (private school, adult education, and academic education programs) so as to set up norms against which future programs can be evaluated (158)
- The purpose of the Part-time Adult and Employer Evaluation Study is to assess the vocational training courses offered to adults by the Oklahome State Department of Vocational and Technical Education (144)
- To determine from the graduates their evaluation of the program's curriculum, facilities and equipment, instruction, and placement assistance (144)
- To determine, from the employers, their evaluation of the adult students' quality and quantity of work, and the student's skills and abilities in the occupation (144)
- To determine program effectiveness in terms of placement of enrollees after exiting from school (245)
- Assess how well school experiences prepared individuals for employment and/or furthering education (44)

Planning

- To provide information on placement and geographic mobility trends for manpower planning purposes (158)
- To provide decision-makers with reliable information for planning purposes (245)
- To provide educators a sound base of information to help in the process of allocating funds in the most effective way (245)
- Determine the impact of schools on manpower supply (44)
- Improved program planning (175)
- Provide data for the development of grant proposals (89)

- To make data available annually to high school, 2nd and 4th year colleges for advisement of students and parents in Ag. career planning (234)

Research

- To provide, for comparative purposes, a similar profile of non-credit extension students in the NCCS in terms of their demographic, socio-economic, academic, and attendance characteristics (189)

- Provide a socio-economic and demographic profile of North Carolina adults 18 years of age or older to serve as a comparison base (189)

- Analyze relationships between selected demographic, socio-economic, academic, and educational program area variables in attaining the foregoing objectives (189)

- To help determine the impact of training programs in the supply and demand of human resources in Puerto Rico (245)

- Gather data to form a base for additional studies (44)

- To examine student perceptions of the economy on job retention and mobility (53)

- To examine the relationship between graduates' career patterns and further educational studies in their community college major field (53)

- What were the differences between graduates and non-graduates by programs and levels of graduation in their:
  a. Selected personal and social characteristics and prior academic achievement?
  b. Employment activities such as starting and current salary, types of job positions, and location of employment?
  c. Educational activities after leaving the community college?
  d. Attitudes toward certain aspects of their community college education?
  e. Attitudes toward certain aspects of current employment? (217)

- To determine the bi and multi-variate relationships contributing to the prediction of successful outcomes (14)

- To compare the employment and experience of this sample with those of vocational education students responding to a national longitudinal follow-up study sponsored by the National Center for Education Statistics (14)

- Determine relationship of students' final program to occupational choice (80)

- Conduct related research which will facilitate the accomplishment of the previously stated activities (202)

- Provide data on the impact of former students on industry and identify areas for improvement in the TEC program (89)

- What are the characteristics of former students in terms of sex, race, age, marital status, home, residence, parent's education, father's occupation, and academic achievements (e.g., type of degree, completed to date, type of curriculum last enrolled in or completed, cumulative GPA and total number of credits earned) (217)

- What related socio-economic and residency characteristics are discoverable (217)

- What proportion have found employment within their home localities or within Virginia (217)

- What proportion have continued their education and how consistent was that continued education with their community college program (217)

- What factor(s) influenced students to attend community colleges or enroll in specific occupational-technical programs (217)

- Determine current vocational-education status of those that began vocational education transfer programs (80)

Evaluation of the Follow-Up

- To determine if the present system of gathering follow-up data is adequate considering cost for method (144)

- To improve the preciseness of reporting supply data for the Occupational Training Information System through more specific job descriptions (148)

- Eliminate duplication within institutions of multiple limited-item follow-up studies (89)

Other and Multiple Classification

- Develop a consistent on-going methodology for tracking students who have attended TEC institutions (89)
- Provide data for use in public relations activities (89)
- To collect information about the former students concerning their biographic and educational characteristics and plans (122)
- To determine the present activities for the former students (122)
- Determine the extent to which current activities are related to the school program and student goals (44)
- To better define employment status of Auto Mechanics completers, with the direct intent of developing definitions or guidelines for use in determining the related or unrelated occupational status for reporting to the Student Accounting System (148)
- To identify the employment patterns of graduates in the Division of Technology (53)
- To examine further educational studies pursued by students and the types of programs in which these studies were undertaken (53)
- Provide information useful in assisting local school personnel in planning and evaluation (96)
- An organized student record system (175)
- How do retention and withdrawal rates of occupational-technical students vary among programs and types of degree earned (217)
- What are the reasons why non-graduates did not complete their community college program (217)

Summary - Follow-up reports seldom state the goals or purposes for collection of the data. System manuals and users guides often state either goals, purposes or include some statements that define the desired outcomes of the follow-up. The fact that goals or objectives are not explicitly stated does not, however necessarily mean that such were not developed. Perhaps a lesson can be learned from former students and employers who did not respond to follow-up surveys. One of the reasons stated most often for non-response has been that the student or employer failed to see any clear reason or justification for collection of the data. A clear statement of objectives might reduce the effort required to obtain responses from some members of the population.

Review of Selected Practices and Procedures

The preceding section provided a descriptive overview of the characteristics of student and employer follow-up studies. The review, however, revealed several areas which appear to have presented unique problems in the past. These areas were specifically reviewed and findings are summarized below.

Longitudinal Efforts

Some confusion appears to exist regarding the differences between longitudinal and cross-sectional studies. Some reports that claim to be longitudinal are, in fact, cross-sectional. Further, there is no exact definition of the amount of time which must pass before a given study can be considered to be longitudinal. For the purpose of this document, a study is considered to be longitudinal if the same individuals are followed-up two or more times. A study that describes the impact of a program by following-up the same class five, ten, and fifteen years after graduation would be considered longitudinal in nature. Cross-sectional studies are those which follow-up different groups of the same category of individuals at different points in their careers. Thus, a study that attempts to describe the impact of a program by following-up graduating classes of three different years with a single data collection effort would be cross-sectional.

Only seven longitudinal follow-up studies were identified among the reports reviewed. Those found had one of two major objectives: to investigate a specific research question or, to pilot test a longitudinal follow-up system. A number of reports were found to have utilized a cross-sectional design and in several cases such studies had been labeled as longitudinal by their authors. The research oriented follow-up studies which were truly longitudinal took their data in part or total from two sources, the National Longitudinal Study (NLS) or the Vocational Development Study (VDS). It appears that little is being done in the area of longitudinal follow-up of Vocational Education students.

Sampling Techniques

The extent to which the sampling techniques used are described varied widely among the reports and manuals reviewed. Simple random and simple stratified samples were by far the most commonly used sampling techniques. Table 36 describes the sampling approaches used and their relative popularity. Among the reasons given for employing a sampling technique were financial, time and resource limitations, and concern about return rate.

Table 36

Sampling Techniques Used in Follow-Up (n=26)

Simple Random	Simple Stratified	Proportional Stratified	Systematic	Cluster
38	34	12	12	4

A majority of those employing a stratified sample chose to stratify the sample on the basis of program or curriculum. Several reports indicated that additional strata were employed such as geographic descriptors or job market characteristics. In a few instances a matched control group was used and subjects were matched on the basis of key characteristics such as race, sex, and IQ. Only two reports were found which defined the reasons for using a stratified sample and the rationale for the strata used.

The mail-out questionnaire was the most popular method of collecting data among follow-up studies which employed a sampling technique. Of those studies describing the methodology used to collect data, Table 37 indicates that 76 percent used mail-out questionnaires. Personal interviews were used by 18 percent of the follow-ups employing a sample while in six percent of the cases both a questionnaire and personal interview were used.

Table 37

Primary Method Used to Collect Student Follow-Up Data for Studies Using a Sample (N=34)

Questionnaire	Personal Interview	Personal Interview and Questionnaire
76	18	6

The rationale used to determine sample size was not clearly specified by the majority of follow-up reports or manuals. However, two reports indicated that validity considerations and a need to insure representativeness were factors in establishing sample size. Table 38 describes the portion of the population included in the sample for those studies employing a sample. Sample sizes ranged from 3 to 75 percent of the population. Most of the studies reviewed reported sample size to be 10 to 25 percent of the population. Judgements about the adequacy of sample size are difficult to make on the basis of the portion of the population included in the sample. However, samples are commonly described in this manner. Whether sample size was originally defined as a portion of the population or merely reported in that manner is unclear in many instances.

Table 38

Size of Sample Used as a Portion of the Population (N=19)

1 to 15	16 to 30	31 to 45	46 to 60	61 to 75
47	48	0	9	6

Table 39 depicts the distribution of return rates for follow-up efforts which surveyed a sample. The median return rate, for those follow-up studies reporting a rate of return or providing the information necessary to determine a return rate, was computed to be 58 percent. Overall there appeared to be little difference in the pattern of return rates reported by studies that used a sampling technique and those that did not. Three studies were identified which utilized a sample that was ten percent or less of the population and reported return rates of less than fifty percent.

Table 39

Percentage Return Rates for Follow-up Efforts Surveying a Sample

0 to 25 Return	26 to 50 Return	51 to 75 Return	76 to 100 Return
16	34	28	22

Non-Respondent Procedures

Response rates obtained by follow-up studies vary widely. This review found return rates in student follow-ups to range from under 25 percent to over 90 percent with the median response rate of 60.3 percent. Return rates for employer follow-up studies were found to be higher with only three studies reporting less than 50 percent returns. The Southern Regional Education Board (197) reviewed response rates obtained by college student follow-up studies. They reported a median return rate of 52 percent for follow-ups conducted by two year colleges and 36 percent for four year college studies.

In spite of the fact that response rate for many of the student follow-up studies reviewed was disappointingly low, very few addressed the possibility of non-response bias or carried out formal procedures to determine whether such bias could be inferred. The extent to which the findings can be generalized to the study population cannot be determined without such procedures, particularly in the case of low return rates. The utility of the findings of studies that have ignored the possibility of non-response bias is questionable.

There was some disagreement in the studies reviewed about the definition of non-respondent. A number of studies referred to a non-respondent as any student who did not respond to a particular "wave" or mailing. The present review, however, has defined a non-respondent as any person who has not responded after all the planned follow-up contact procedures have been carried out. For example, a data collection plan might include a first mailing, a second mailing and finally, a telephone interview. After all three of the contact procedures had been completed, those persons who have not responded would be considered "non-respondents" by this definition.

A few studies were identified which did report specific procedures employed to assess the probability of non-response bias. Procedures and findings reported by those studies are summarized below.

Little and Whinfield (124) used a short form of the original questionnaire to follow-up non-respondents after original procedures, two mailings, had yielded a return rate of 54.77 percent. The first mailing of the short form yielded a response from 21.72 percent of the identified non-respondents and the second mailing yielded an additional 5.28 percent return. Out of a total response of 1,517, 501 responded to the short form questionnaire. Separate analyses were conducted for the two questionnaires and comparisons of the two groups were conducted on selected items. Chi-square analyses revealed significant differences between the groups on all selected variables except one. Short form respondents reported a lower rate of job relatedness to training, average incomes were equivalent but the short form respondents had a wider range of incomes. Among females, short form respondents had a lower average income. The authors concluded that due to the significant differences between the two groups, study findings could not be generalized to the total graduating class.

Moore, et. al. (137) used a series of telephone interviews with 20 persons who had not responded after three questionnaire mailings. These telephone interviews attempted to determine why the interviewees had not responded and whether they were employed in the health field in which trained. They found that the employment status of the 20 persons interviewed by telephone did not differ significantly from the respondents. It should be noted, however, that there were a total of 1040 non-respondents so it is doubtful that 20 interviews constituted a sample of sufficient size to make such generalizations valid.

Gustilo and Trufant (75) randomly selected a five percent sample of non-respondents from each college surveyed for telephone interviews. Significant differences were found between questionnaire and telephone respondents in several areas. Non-respondents reported higher initial salaries although present salaries were not found to be significantly different. Telephone interviewees were more positive in their rating of the quality of their college preparation and on their ratings of counseling and job satisfaction. The authors concluded that the method of eliciting response, rather than inherent differences in opinions of respondents and non-respondents, caused non-respondents to be more positive when rating aspects of the program.

Smith (194) randomly sampled students who had not returned a mail questionnaire to be contacted by telephone. A total of 120 (1973-74) non-respondents and 167 (1974-75) non-respondents were contacted. What portion of the non-respondent population these numbers represent was not reported. Comparisons were made between respondents and non-respondents for respective years. It was found that both non-respondent groups included more males and fewer females than did the respondent groups. More non-respondents were employed full or part-time and a greater percentage of respondents were unemployed. Non-respondents tended to like their jobs somewhat less than respondents. More 1973-74 respondents reported that they had jobs corresponding, or highly related, to their training and that they traveled farther to work than non-respondents for the same year. The 1973-74 non-respondents were found to have the highest average hourly wage. Chi-square tests between the total non-respondent and respondent groups revealed significant differences only on work hours per week and one-way commuting distance for 1973-74 grads with respondents both working more hours and driving farther.

Tschechtelin (218) used a sequential sampling of non-respondents to determine if non-respondent bias could be inferred. Non-respondents were randomly selected and interviewed by the telephone on selected questionnaire items which could be answered either "yes" or "no". Cumulative frequency "yes" charts were constructed as interviews were conducted. When the yes responses clearly leveled off, interviews were terminated. An arbitrary ten percent tolerance limit was set as an estimate of similarity between respondents and non-respondents. A chi-square statistic was used to test the relationship between the groups at nine colleges. Non-respondents were found to be significantly less interested in transfer goals, to regard their program more highly, to be more likely to be employed and less likely to have transferred. Additionally, significant differences were found to exist between respondents and non-respondents in terms of success, credit hours, grade point averages and rate of graduation. The author concluded that the differences between respondents and non-respondents, made it impossible to safely generalize the findings of the study to the entire population of the first-time students who entered Maryland community colleges during the Fall of 1972.

Finally, the Southern Regional Education Board (SREB) publication, Follow-up Surveys of College Graduates (197), describes both direct and indirect methods for assessing non-response bias in follow-up studies. Either limited random sampling or sequential sampling coupled with telephone interviews on selected questionnaire items is recommended as a direct method. Indirect methods are comparison of the respondents' demographic characteristics with the characteristics of the total population or a comparison of respondents and non-respondents on selected demographic variables. If the demographic characteristics of the respondent and the total population differ, methods to determine the relationship between the demographic characteristics and response to the selected items are suggested. One additional methodology is discussed. The responses of early responders can be compared with those of late responders. This procedure is based on the assumption that non-respondents are more similar to late than early responders. To the extent that such an assumption is valid, comparisons between early and late responders may reveal bias. The method of sequential non-respondent sampling as used by Tschechtelin (218) and presented in the SREB publication does not appear to be a widely applied technique. Yet it provides a convenient non-statistical approach to non-respondent sampling.

In summary, analyses of those few studies which addressed the problem of non-response bias indicates that differences may often limit the generalizability of study findings. Interestingly, on many variables, non-respondents appear to provide more favorable data than do respondents. This generalization may, however, be limited to the extent that Gustilo and Trufants' belief that such differences may be due to data collection method rather than to true differences in the respective populations is accurate. In any case, one may conclude that low return rates should serve as motivation for non-respondent bias assessment.

Systems Design and Utilization of Findings

Follow-up systems are developed to response to a need for data. In order to respond in an effective manner, the system should be developed with definite plans for interfacing with systems requiring information. Who needs data, the required format, and when the data are needed are all important considerations in planning the follow-up system. It was anticipated that information describing these parameters would be included in systems manuals and other documents discussing the development and operation of follow-up systems. This was generally not the case.

Most of the documents reviewed addressed the issue of systems interface briefly and in general terms. The discussion was usually included in the section describing the objectives of the follow-up system. Thus while the system was designed to provide the information necessary for reporting and/or planning and evaluating vocational programs, no specific strategies were identified for interfacing with those systems or activities.

A number of follow-up systems manuals was found to describe the flow of the follow-up system. Many manuals provided an extensive verbal description of the system. These descriptions contained adequate information about the major steps in the follow-up procedure and their relationship to each other. However, whether described verbally, pictorially, or both, the information stopped short of describing systems interface strategies in detail.

Numerous documents were found which identified potential or actual consumers of follow-up results. These individuals were often identified in general terms such as state or local officials involved in planning vocational education programs. One instance was found which outlined who received which reports on a regular basis, who had requested the information, and how often the information was produced (142). The _TEX-SIS Student Follow-Up Procedures Manual_ outlines rather extensively the data collected and levels at which it could be used.

It appears that the major factors affecting when information is collected and available, as well as the format of that information, are federal and state reporting requirements. Only isolated instances were found which described specific time lines for the follow-up system. An example of such specification may be found in bibliographic reference 97.

Unique Practices and Procedures

A number of reports, manuals, and articles which were reviewed contained unique or unusual procedures. Additionally some researchers compared alternate methodologies and others made specific recommendations based on their experience with follow-up.

It would be impossible to cite all the unique practices identified but a representative sample are summarized in this section. Examples are classified according to their primary feature or function.

Methods to Improve Return Rates	Reference
Pre-addressed, stamped envelopes and scheduled mailing of the questionnaires to have them arrive on Monday. Forms were printed on light, pastel colored paper.	28
Initiated extensive pre-survey publicity campaign including press releases and personal appearances on local radio and television. One of which was a Spanish language station. Utilized a variety of prompts such as personally signed cover letters and "Important Your Attention Requested" printed near address, to encourage response.	31
Students were telephoned to inform them of the forthcoming survey. The survey was mailed and followed three weeks later by another questionnaire to those who had not yet responded. This was followed by a prompt-telephone call. Some of the students who responded were interviewed and paid for the interview ($2.00).	101
A variety of suggestions are offered on how to improve the quality of the follow-up questionnaire and improve return rates. Among these are: Preparation of student prior to program completion, use short and easily understood questions, enclose prepaid return envelopes, avoid asking personal questions, offer to mail a list of those in the same class with an update on each student, enclose news clippings concerning the study, use colored paper, send thank-you cards to respondents, and provide educational program on follow-up to board of education.	129
Third questionnaire mailing included a cover letter stating "If there is a reason why you cannot fill out the survey form, please write a note on the survey form indicating the reason you cannot and return the form and note to us in the postage paid envelope."	154
Emphasized the need for sending pre-survey information to those who will receive questionnaires. The results of four different survey methods are compared and the use of pre-survey information, a prompt was found, to be superior.	158

	Reference
Postcards signed by the teacher are sent in advance of the questionnaire.	175
Printed "Now It's Your Turn" at the top of the questionnaire to encourage response.	231

Non-Respondent Surveys

Comparison of the differences between responders and non-responders from a vocational rehabilitation program using an interview format. Reported results indicate that non-responders appeared to do better than responders suggesting a bias in the use of respondent data only.	46
Comparisons of the results obtained through self-reports versus direct observation. Demonstrated that the two methods of data collection produced comparable results with no significant differences. Three different outcome measures were used as dependent variable.	85
The authors found that those clients that were more difficult to follow-up generally had poorer outcomes suggesting that response bias may occur if non-respondent data is not taken into account.	139
A sequential sampling technique involved selecting at random nonrespondents who were interviewed by telephone on selected yes and no questionnaire items.	218

Incentives

The effects of two levels of incentives (25¢ vs. 50¢) and three levels of question complexity are compared. Best return rate was achieved with the moderate level of complexity and 50¢ incentive.	12
Used a $10.00 incentive for subjects whose cooperation was difficult to obtain.	25
A variety of incentives were employed in this study including a raffle ticket, birthday card, pencil, and keychain.	112
Second cover letter indicated that students could receive a copy of the results of the survey if they indicated their desire for one on the questionnaire.	154

	Reference
Included in the package was a packet of instant coffee.	170
Comparative Approaches	
Comparison of reports of teacher data based follow-up versus student data based follow-up and found significant differences between the two reports. Questions to the students included current employment status, job title and description of duties performed.	49
Differences in return rates as a function of including the student's name of the questionnaire near the survey item requesting salary information. Differences, were found although only slight, with a tendency for a greater return rate and increased reporting of salary among those who received surveys without their name printed on the document.	63
Comparison of the obtained return rate for questionnaires when the following strategies were employed: 1. A single telephone call 10 days after mailing the questionnaire. 2. A written message arriving 10 days after mailing the questionnaire. 3. A personal letter and new questionnaire with a telephone call 10 days after the mailing of the questionnaire. 4. A personal letter and new questionnaire 10 days after mailing the questionnaire. 5. Telephone call 3 days after mailing with another telephone call 10 days later to non-respondents. The results showed the fifth strategy to produce the highest rate of return with the third and fourth strategy respectively producing the next produced the poorest results.	233
Other	
Allow additional questions to be added to the basic questionnaire by localities or teachers.	96,175
Graphics were used extensively to present the results of a follow-up study to parents and former students.	125

	Reference
Good use of graphics and cartoons in questionnaire booklet.	245
Localities can develop their own questionnaire as long as specified key questions are included.	243
Students conducted and participated in the collection of data for follow-up reports.	103

Overall Summary

Purpose and Procedures

The ultimate purpose of vocational education as stated in legislation and expressed by many individuals and groups associated with vocational education is to prepare individuals to enter the work force. In order to determine the success of vocational programs in achieving this purpose, it has been necessary to follow-up former students. The purpose of this document was to describe the procedures used to gather information from former students and their employers. The review was restricted to follow-up efforts conducted after 1970 since Little (1970) describes procedures employed in follow-up prior to that date.

Over 600 articles and reports were identified through a traditional computerized search of the ERIC system. Additionally, over 200 documents relating to follow-up were obtained by contacting individuals throughout the United States, territories, and Canada. Some overlap was found to exist in the documents obtained from the various sources. Approximately 300 documents were deemed important enough to warrant detailed review. This document was developed from that review.

Concerns and Issues

Methodology - Systematic planning of data collection procedures does not appear to be a universal practice. Methods should be chosen to achieve the purposes and objectives of the follow-up, with consideration given to alternatives. In many instances, tradition appears to be the major factor in selecting data collection procedures. Considerable information is readily available in the literature but has been ignored. This is most evident with regard to techniques for increasing response rates. The utility of prompts, incentives and the proper timing of information requests is common in the literature. Yet these techniques are infrequently used. Few follow-up efforts of a longitudinal nature were found. There appears to be a preoccupation with generating mandated reporting data to the exclusion of long range benefits.

Quality of data - Few follow-up efforts were found to conduct checks for non-respondent bias, even when response rates were poor or marginal. Yet most at least imply the generalization of findings to the population. In most instances where a non-respondent survey or check was conducted, generalization was determined to be unwarranted because of bias. A less prevalent but still common problem was an apparent lack of congruency between the stated purpose or objectives of the follow-up and the data collected. Additionally, few efforts report results of investigations of either the reliability or validity of follow-up instruments. The extent to which instrument reliability and validity are scrutinized is uncertain.

Documentation - Complete and detailed documentation of developmental and operational procedures appears to be less than common. Considerable reinvention of the wheel seems to be prevalent in follow-up systems being developed and staff turnover in established systems often makes redevelopment of major system components necessary. Lack of stated objectives and poorly documented procedures and data have encouraged duplication of effort and reduced the overall utility of follow-up information. Of particular concern, is the low number of follow-up efforts found to report the costs associated with operating the system and how they were computed.

Reporting format - The most common format does not include much, if any, data interpretation. Most reports focus primarily on reporting only summary statistics. Historical and environmental influences are rarely recognized or discussed in relation to findings. Additionally, the actual questionnaire is rarely included and response rates, sample design and methodology are often not described. This creates an unfavorable atmosphere for evaluating the reported findings.

Positive Findings

Scope and quality - Some form of follow-up of former vocational students is being conducted in all states, territories and most Canadian provinces. Considerable follow-up is being done that does not appear in the literature such as efforts conducted by local education agencies. Almost all community and junior colleges appear to be engaged in follow-up to some extent. A number of exemplary follow-up systems exist and many other systems include one or more components that are well conceived and executed. Thus it appears that a real effort is being made to improve existing follow-up. The importance of follow-up data in the evaluative process, as outlined in recent legislation, should encourage further improvement.

Available information - A considerable amount of information regarding follow-up is readily available. Individuals involved with follow-up seem to be very cooperative and willing to share experiences and information. Those systems which are exemplary in nature are almost always well documented. In addition to the vast amount of information available which is directly related to the follow-up of vocational education students, much information exists on follow-up procedures and methodologies that have been used in other fields such as mental health and corrections. A largely untapped source of highly sophisticated information is that describing techniques used in marketing and business. One of the limitations of this review is that those sources were not investigated. While considerable general information exists about follow-up, there is a shortage of research based information such as comparison of methodologies or techniques used for increasing response rates.

Attitudes toward follow-up - In general, attitudes toward follow-up appear to be positive. A majority of former students seem to be quite willing to provide information if provided reasonable justification for the collection of data and explanations of how the data will be used. Although few follow-ups of former students' employers have been conducted, the general response rate of employers when surveyed has been good. It appears that employers are willing, and often eager, to provide information for program improvement if reasonable demands are made on their time. Where negative attitudes toward follow-up exist, these are most often a product of inadequate justification or explanation or failure to provide feedback to cooperating agencies or jurisdictions. Planners of follow-up are developing a positive attitude toward the planning of follow-up and investigating the feasibility of nontraditional approaches to the conduct of follow-up. This is exemplified by the fact that numerous efforts were found to include outstanding or unique practices.

Use of follow-up - While it was beyond the scope of this study to identify the uses of follow-up data or the extent of their use, some information was obtained. Instances have been found where follow-up information was effectively used to benefit vocational education financially, programmatically or for increasing the awareness and acceptance of vocational education by the general public or target groups. Although follow-up has traditionally been viewed as an expensive endeavor, the cost data that were available seem to indicate that the cost does not have to be prohibitive. When follow-up is compared to other methods that might be used to obtain similar evaluative information, follow-up seems to be a bargain. Moreover, the information obtained through a well planned follow-up has the potential for wider utility than that gathered through other means.

Overview of Follow-up Procedures: A Training Guide

The review of follow-up manuals, reports and articles summarized in this document had two primary goals or purposes. The first was to provide the present review and synthesis which is entitled Follow-up Procedures: A National Review. The second was to provide the information necessary to develop a comprehensive and systematic set of materials which should help persons with the responsibility for development, modification or evaluation of vocational student and employer follow-up systems. This purpose resulted in the development of a second product entitled Follow-up Procedures: A Training Guide.

The training guide presents a systematic approach to the development and/or improvement of local or statewide vocational student and employer follow-up systems. Every effort was made to make the Training Guide useable and practical. Many examples of good methodological practices from operating systems are provided and cross referencing to the review document are included to help the user acquire additional information when needed.

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Appendix C

Follow-Up Procedures: A Training Guide

FOLLOW-UP PROCEDURES: A TRAINING GUIDE

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Developed from the Project
A Comprehensive National Review and Preparation of
Training Materials for Student and Employer Follow-up

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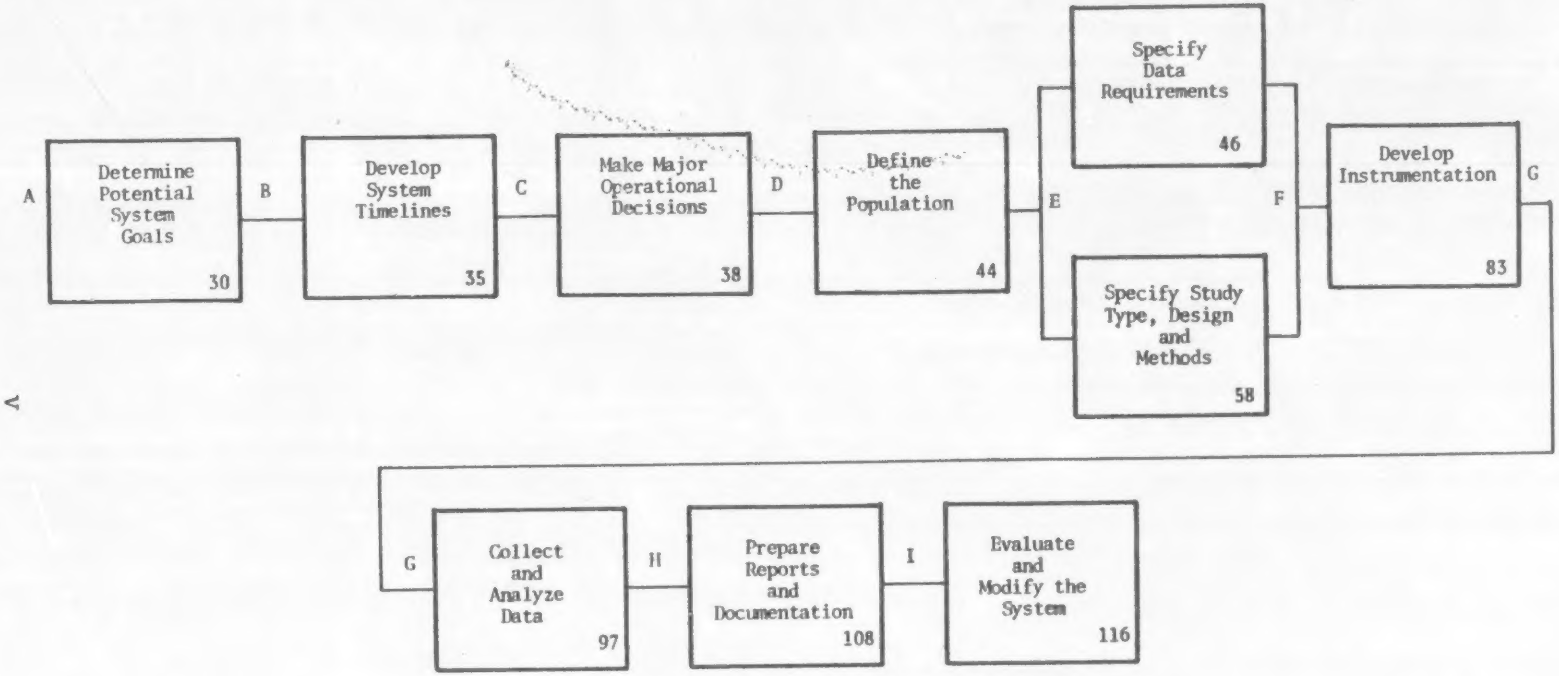
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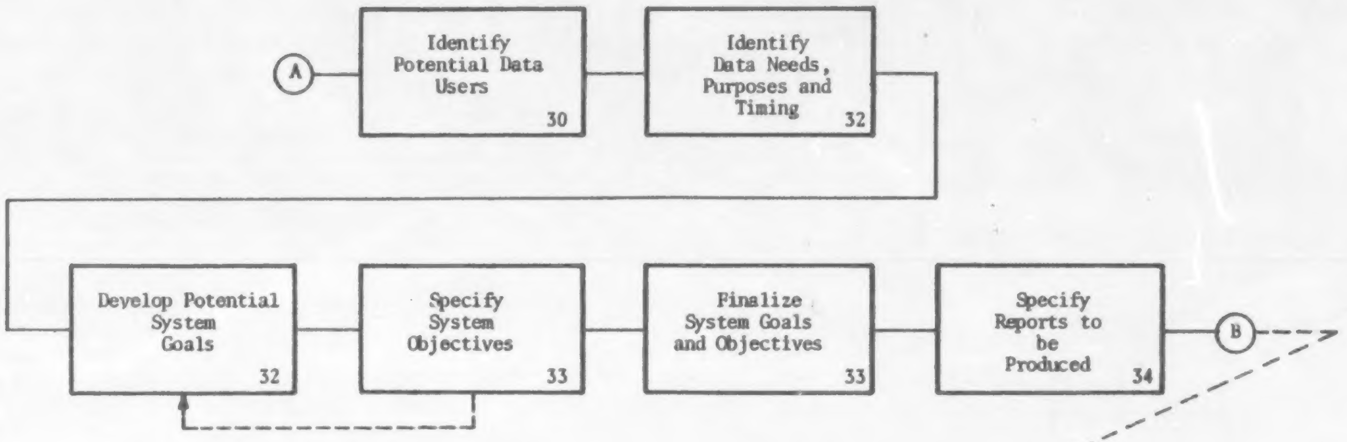
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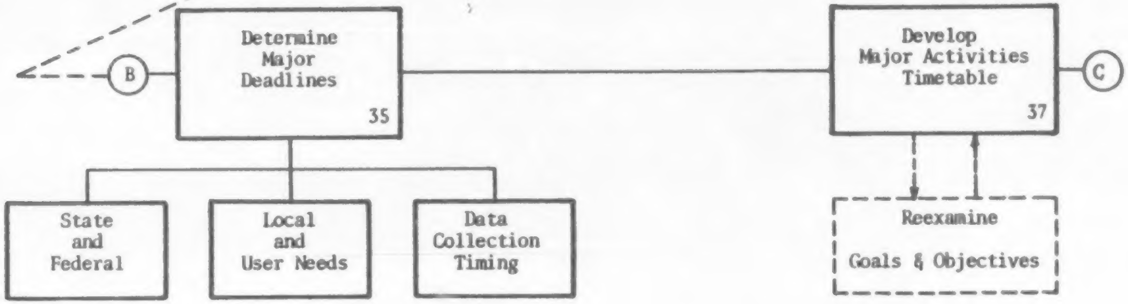
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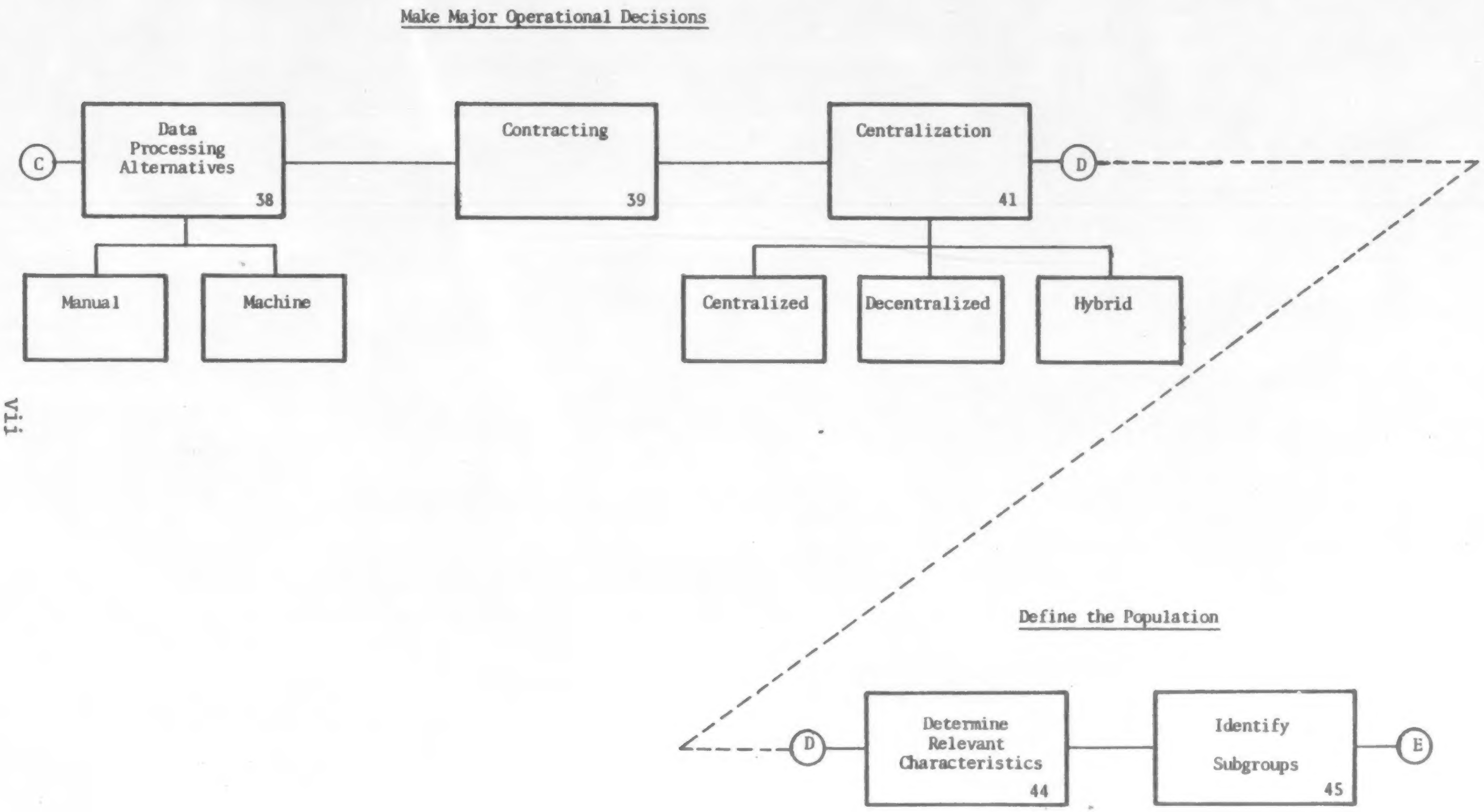
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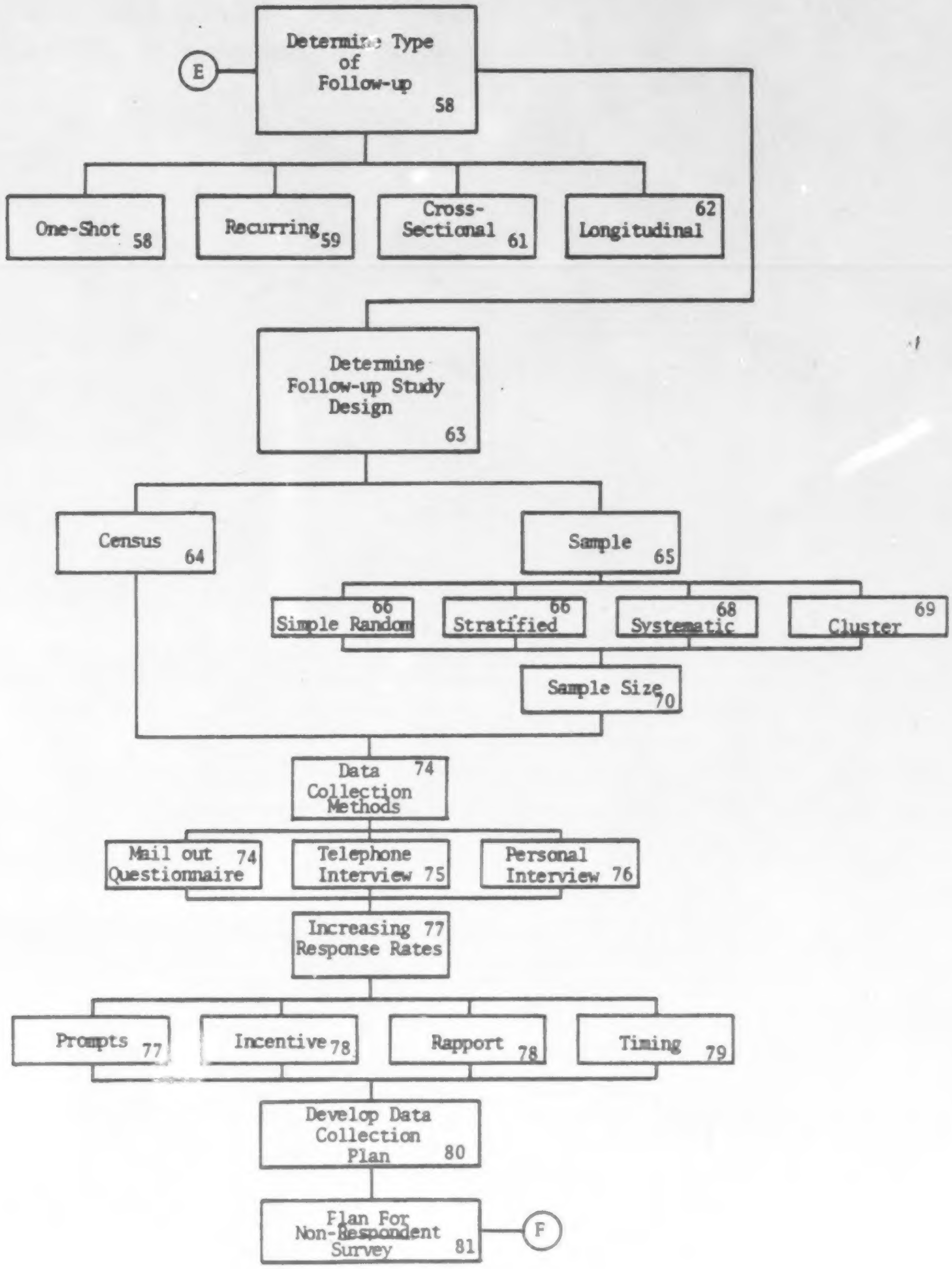
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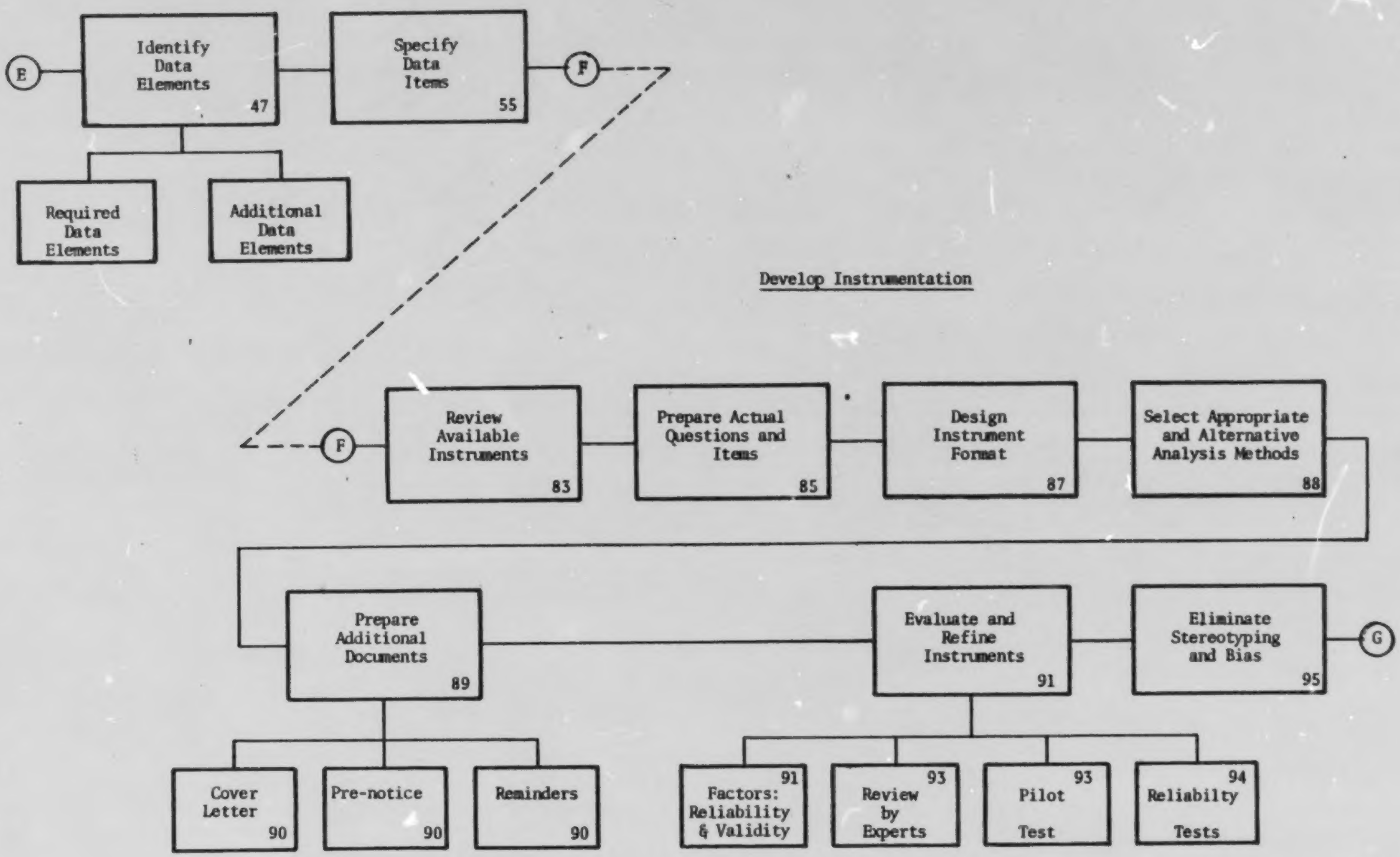
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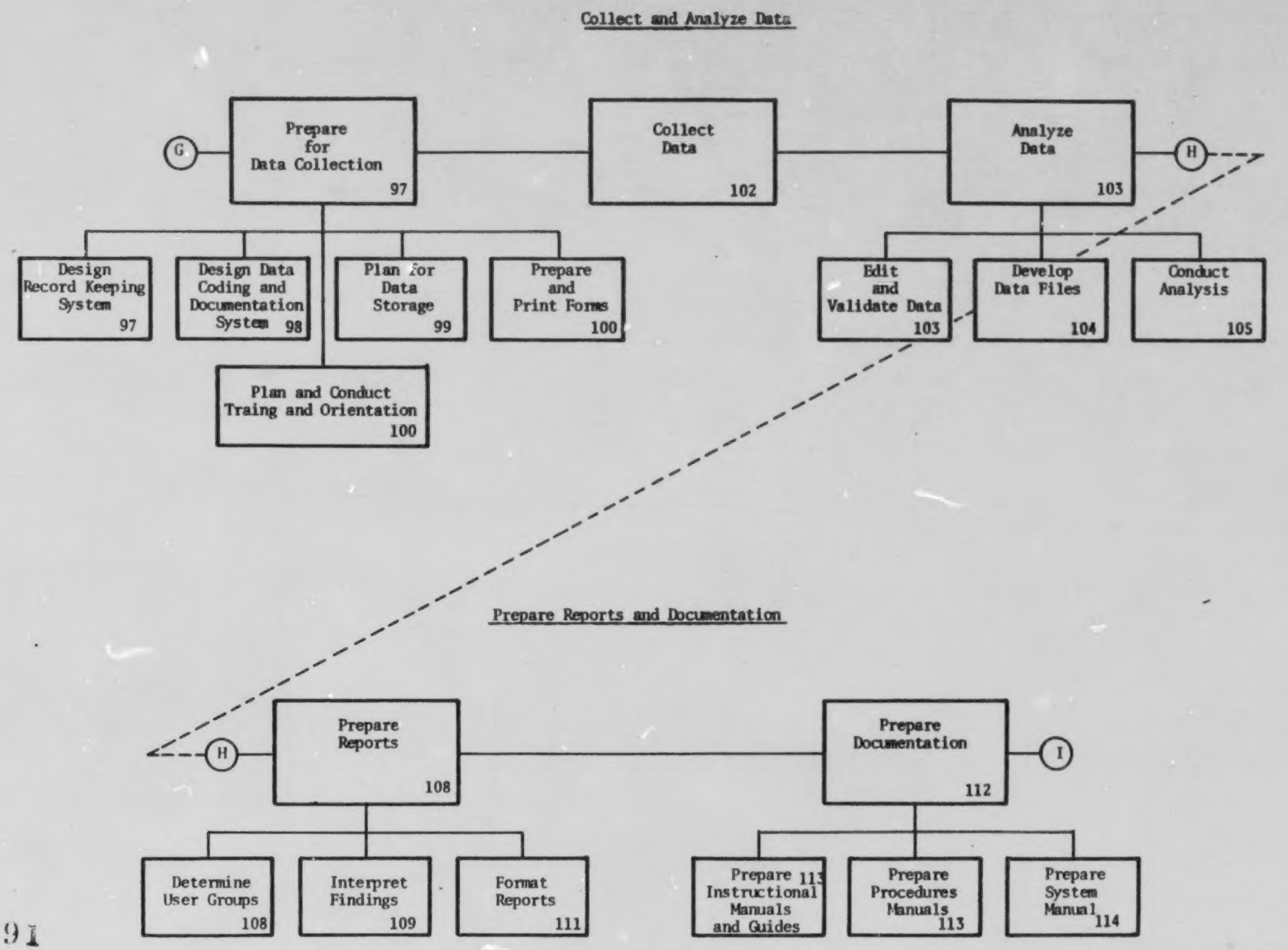
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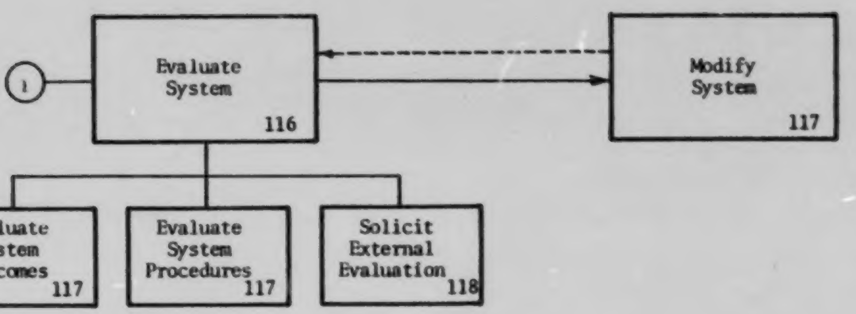
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INTRODUCTION

Vocational education has probably had more experience following up students than all the rest of education (and all other occupational training) combined. Since 1965, approximately twenty million vocational students have been contacted or information about them obtained in the year after completing or leaving their programs. In the process, a considerable body of knowledge about the collection and use of follow-up data has been accumulated, only portions of which have been disseminated and then only to limited audiences.

Purpose

The purpose of this Guide is to make that knowledge available to everyone who needs it. There are different ways of collecting information, different kinds of information to be obtained, cost variations, sampling techniques, advantages and disadvantages of individual student data, verification and validation procedures, and many other details about which experience can be used in developing new systems or improving existing ones. In the preparation of this guide, an effort has been made to organize the experience of many States and local schools into a sequence of logical steps from the first consideration of a follow-up system to its complete implementation. It may be used at the local or state levels to design and develop an entire system or to modify components of an existing system.

It is not the purpose of this Guide to single out particular systems now in operation and recommend them to other vocational educators. One kind of a follow-up system with a particular set of characteristics may be quite satisfactory where it is being used, but might not be suited for another State or local school without extensive modifications. In some cases, the choices are simply of convenience or style rather than of a right or wrong way of doing things. In other cases there are tradeoffs -- a less flexible system, for example, in exchange for a lower cost. A major purpose of this guide is to describe the options that are available at each step in the process of

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designing, developing, and implementing follow-up systems, and the advantages and disadvantages in each case.

Need for a Guide

Follow-up information is only as good as the system through which it is obtained. There are many local and state follow-up systems in operation, but they vary widely in quality and scope. There has been some sharing of forms and procedures and a certain amount of research on how to do follow-up, but even the research has not been widely disseminated. Many follow-up studies are conducted which are not reported in traditional journals of the field. Consequently, developers of follow-up systems appear to be repeatedly re-inventing the wheel, and with uneven results.

A comprehensive review of existing systems was conducted prior to development of this guide. This review revealed follow-ups with return rates ranging from a low of eight percent to as high as 100 percent. Very few systems reviewed attempted to follow-up employers of vocational students, which is now a requirement under 1976 Federal legislation. The review of existing systems, while revealing a wide range of differences in procedures and some questionable practices, also demonstrated that excellent procedures and comprehensive systems do exist. This guide is an attempt to bring together in a useable format the best of what was found.

How It Was Done

"A Comprehensive National Review and Preparation of Training Materials for Student and Employer Follow-up" is the title of a research project from which this guide is a product. It was approved for Federal vocational education research funds under Part C late in 1977. The purposes of the project were to conduct a comprehensive national review and synthesis of vocational student and employer follow-up and to use the findings of that review in the development of a training manual. Traditional literature review procedures were used, but in addition, inquiries were made of key individuals in each state, territory and the Canadian Provinces to obtain current follow-up materials and reports. The focus of the review was on methodology, not data. Over 1,000 pieces of information related to follow-up were obtained, and over 300 documents directly related to student or employer follow-up were reviewed in detail.

There are two products of the project: this guide, and a companion document, "Follow-up Procedures: A National Review." While the guide is complete in itself, the review document may be used with it to locate follow-up studies in which particular practices have been used. The reader may wish to examine these in greater detail, which can be done by referring to the review document. The review document may also assist the reader in locating individuals who have designed or are using follow-up systems of particular interest.

Rationale for Follow-up

Issues

There are at least five issues involved in whether or not to collect follow-up data.

a. The need for information in program planning and improvement and occupational information systems versus the cost of obtaining that information.

b. The public's right to know versus institutional objections to exposure.

c. Knowledge versus intuition in educational practice.

d. Improved performance versus complacency in an institutional environment.

e. Students' rights of privacy versus obligations incurred in public education.

Some of these are more theoretical than real, and each of them undoubtedly is of greater importance to some administrators and teachers than to other persons involved in decisions to collect follow-up data. All of them need to be considered. There are basically two reasons to collect follow-up information: a legal or administrative requirement to do so; and a need to know what is or is not being accomplished in vocational education programs. Both are important. The first is essentially an audit function, a measure of compliance, a means of knowing the extent to which funds used are producing the results intended. It is the critical element in accountability. The other is the means by which an administrator or a teacher measures program success, knows if instructional improvements should be made, and develops information describing what vocational programs do for individuals. It is the critical element in planning public relations and in decision-making.

Against these reasons for collecting follow-up data, there are at least two opposing arguments. One is that it costs money, and the other is that most people just don't like having their performance exposed to public scrutiny. The first of these will be discussed in the next section of this guide, but must be recognized at the outset as a problem to be faced. The second is rarely discussed but is often formidable. In its mildest form it is an irritant. In its worst form it is a paranoia, a fear that we will be found accomplishing less than we like to think we are, or more to the point a fear that the job we are doing will look worse than what someone else is doing. Individually, most administrators and teachers will not allow themselves to be identified with such an attitude, but as members of an institution they may feel a certain proprietary obligation to protect the institution's image. It is a widespread institutional characteristic to which schools and state departments of education are as susceptible as any other public agency.

There are two additional characteristics of education which may not result in open opposition to the collection and use of follow-up data but can reduce their effectiveness. One is a preference for making decisions on the basis of one's own professional judgment rather than to rely on performance data from another source. In practice, it often amounts to the use of intuition rather than knowledge. The other is an affliction of all organized activity, a sense of complacency when programs become routine. Program improvement is something to be supported in the abstract but acted upon only under considerable provocation.

The concern for the privacy of individuals has become the basis for objections to follow-up data collection in a number of states and communities. This is not widespread but should be recognized. It is a very proper and legitimate concern, but one that need not interfere with proper and legitimate follow-up of students educated at public expense and in public institutions. Follow-up systems are most flexible when subject identity is included, but, such identity can be dispensed with in extreme cases.

Benefits

The benefits to be realized from a follow-up system are potentially substantial. Work success and satisfaction of former students, their assessment of the school and training program from their post-program perspective, employer appraisal of vocational graduates and/or their training, descriptive data on employment status of former students and other kinds of labor market information all can be valuable inputs to larger systems of program planning and assessment, career guidance and accountability/reporting. If the data should show that all programs are successful, that sutdents and employers alike are pleased with the results, this would be evidence to support program expansion, raise vocational education to a higher priority in relation to other educational programs, and stimulate everyone involved to continue to maintain quality programs. But that is the stuff of which dreams are made, and few if any follow-ups will yield only gratifying results. In the real world, some of the follow-up data will be encouraging, and some less than encouraging. Therein lie the greatest benefits from obtaining follow-up data, however. If they are valid, they help show which programs and under what set of conditions satisfactory results are being obtained and where they are not.

This uneven pattern gives administrators, teachers, and others involved in vocational education an indication of where to direct additional resources or where to withdraw them, which programs to give special attention to, where goals are being met and where they are not, and what changes and redirection in previous years have achieved the results intended and which ones have not. Wherever program strength is reflected in the follow-up those programs may serve as models in strengthening others. Where the results of the follow-up are disappointing, benefits can be achieved through making changes. Programs can be modified, updated, eliminated, or given new direction according to data coming from a follow-up system. This is not to say that each year's follow-up data should result in drastic changes, but the accumulation of data can be analyzed for problems that appear as trends and achievements equally sustained until little doubt remains regarding the degree of success or failure in either case.

The knowledge thus obtained from follow-up data can also be used to help correct situations that call for improvement. If poor program results can be traced to inadequate financial support, the evidence in the follow-up may be used to obtain better support. If former students indicate that the equipment used in their training was out of date compared to what their employers expected them to be able to use, this information can document a request for new equipment. Follow-up data may also indicate the existence of programs from which a majority of graduates are employed in occupations unrelated to their training. Such information identifies the need to assess the job market or programmatic conditions which explain why such a situation exists and what action should be taken. Beyond the program planning/assessment/improvement aspects, the potential of certain follow-up data as one input to an overall occupational information/career planning system has considerable but often underutilized potential.

It comes down to the fact that knowing what happens to students after they complete or leave vocational education programs is the only way of knowing what to do differently and what to continue doing in those programs from one year to the next, or preferably from several years to the next. It is the difference between administering, teaching, advising, legislating, and even enrolling with a reasonable amount of knowledge or doing these things blindfolded. The benefits of follow-up data in this respect are not bonuses to be gained from spending the money and establishing a system, but the means by which the effectiveness of vocational education can be assessed.

Goals and Objectives

A follow-up system may have as its only purpose to supply data required for State or Federal reporting, and indeed many have no other goal or objective than that. Compliance reporting alone is probably an unjustifiable cost, and it is not surprising that many vocational educators resent the time and effort as well as the cost of collecting follow-up data solely for this reason. The data collected under such circumstances do have some potential value beyond mere reporting, but relatively little compared to what they might have if different goals and objectives were the basis for the system's design in the first place.

Any number of goals and objectives may be chosen in deciding to establish a follow-up system or to make changes in an existing one. Monitoring program quality, keeping programs current with advancing technology, improving vocational education opportunities for the handicapped and disadvantaged, identifying barriers to some programs for certain kinds of students, assessing sex sterotyping, developing programs to meet particular employers' needs -- these are all feasible goals, and there are many more. Too many at the same time might be self-defeating, requiring too much data and reducing the follow-up response. But too few is almost certain to be inefficient. Each agency should weigh its decision carefully as to what it hopes to gain from the follow-up.

In the end, a tradeoff is probably necessary. The possible goals and objectives are limited by the size of the system. A local follow-up system can generally collect data on a wider range of variables than can a state or national system but any system will have to trade some goals for a reasonable demand on students, teachers, and employers in supplying information. This guide will attempt to supply the information needed in making such decisions. It cannot be emphasized too strongly at the outset that goals and objectives should be formulated, and that they should invariably go beyond supplying data for reporting purposes only.

Definitions

A number of terms are used in the Guide in a context specific to follow-up. The following definitions are provided to clarify their meaning as used here.

Census - An attempt to contact the total population rather than a sample from that population.

Compliance - Complying with or meeting the requirements of a law or agency.

Cross Sectional Study - A study in which data are collected at one point in time from several categories of individuals included in a larger population.

Data Element - A generic category of information such as "employment status" which may contain several data items.

Data Item - A specific piece of information within the data element (category) such as "employed full or part time."

Follow-up - The attempt to secure educational, employment or other information from or about former students for purposes of planning, reporting, evaluation or conducting research.

Incentive - A gift, payment, or technique used to elicit response.

Longitudinal Study - A study in which data are collected at different points in time in order to study changes or emplore time - ordered associations. Three types of longitudinal studies are commonly recognized: trend, cohort and panel. A panel longitudinal study is one in which the same individuals are followed-up at each data collection point. For purposes for the present study the terms panel longitudinal and longitudinal study are used synonymously.

MIS - An acronym for Management Information System. A system for collecting, compiling, analyzing and reporting information needed in making management decisions.

Non-Respondent - Individual who has not responded after all planned data collection procedures have been carried out.

Population - The total group with which the study is concerned.

Reliability - The extent to which an individual's responses to follow-up instrumentation are consistant either within the instrument or over a short period of time.

Sample - A number of students or employers selected from the total population and intended to be representative of that population.

Validity - The extent to which individuals provide the information the follow-up instrumentation was designed to collect.

VEDS - An acronym which stands for the National Vocational Education Data Reporting and Accountability System mandated by the Education Amendments of 1976 (P.L. 94-482).

PLANNING THE FOLLOW-UP

Basic Considerations

There are three basic considerations in developing a follow-up system or making changes in an existing system: How much it is going to cost; the quality of its data, and its adaptability. Each of these is affected by a number of additional factors such as characteristics of population to be surveyed and the uses that are likely to be made of the data. Both the basic considerations and the factors affecting them will influence what the systems can do, the kind of a system it is, and the extent of satisfaction in its performance. In order to avoid false starts, it is adviseable to begin actual planning only after careful attention is given to each of the following.

Cost

Follow-up systems are usually expensive but not always. It depends on the kinds of data wanted, the size of the population or sample from which the data are to be obtained, the procedures used to obtain the data, and the extent to which the data are analyzed for management information and decision making. It also depends on the extent to which tradeoffs are possible between cost on the one hand and quality and adaptability on the other. As a rule, the higher the quality and the greater the adaptability, the more the system will cost. This is not always true, however. A relatively inexpensive system can produce data of quite adequate quality and some flexibility. On the other hand, there are a number of very expensive systems in operation which are producing data of doubtful quality and which are not readily adaptable to new requirements.

There are also several ways of determining cost. One is total cost -- the cost of designing and field testing forms, of equipment, of personnel and training, of printing and postage, telephone calls, data processing, and other expenses depending on the system. Some of these are primarily one-time start up expenditures, but most of the cost of a follow-up system is in its operation. Whatever the dollar amount the first year and for subsequent years, total cost is what State legislatures, departments of education, school boards, and budget officers are most concerned about. This is the cost that usually represents a constraint on the design of the system.

Another way of determining cost, however, and one that is often more realistic, is cost per student. Other costs of education are reduced to that basic standard and to its variations such as cost per student contact hour, average daily attendance, and average daily membership. This is a particularly appropriate way of computing cost when several school districts share a common follow-up system or when a State system is compared to local school systems. It is useful in comparing costs of the system from year to year, and in comparing the cost of follow-up to other student costs such as instruction and special services.

Still another way of determining the cost of a follow-up system is cost per useable return. This is something that cannot be figured in advance or even reliably estimated, but it is a very important basis for measuring the efficiency of the system after it is in operation. Actually, it serves a double purpose. It provides a sound basis for determining the cost of obtaining follow-up information from each respondent, and it serves as an incentive to obtain the highest rate of response possible thereby lowering the unit cost. Careful cost analysis serves to identify those procedures that are effective or ineffective in minimizing unit costs.

Ideally, follow-up systems should be planned to meet specific needs and then adjusted to fit cost requirements. Too often they are planned instead within the limits of pre-determined fiscal constraints, which has the effect of restricting the investigation of alternatives and stifling creative planning. Rather than a top limit imposed from the beginning as a constraint, a bottom limit may in fact be a more critical consideration, since for every proposed system there is a level of investment below which that system cannot be expected to produce useful information or have credibility. The following is suggested to anyone who is thinking about developing a follow-up system or adding to or making changes in an existing system: explore first the factors affecting basic considerations which are listed below; then gather cost data for each of several alternatives in the design of the system itself; and finally decide the lowest cost that would be acceptable in order to produce the necessary results. In other words, while cost is an important basic consideration in establishing a follow-up system it should be an on-going rather than the initial consideration in planning the system.

Quality

Quality, like cost, can be viewed in different ways. Accuracy of the data, the detail in which the data are obtained, and their flexibility and analytical usefulness are all measures of the quality of a follow-up system. How efficiently and effectively the system meets the information needs of those using the data is another measure of its quality. The significance and utility of the data being collected as against interesting but unimportant information is another measure of the quality of follow-up. The system's credibility, its ease or difficulty of operation, its acceptance by the agency and participants -- these and still other characteristics reflect the quality both of its initial planning and design, and of its subsequent operation. All of these measures should be kept in mind and weighed carefully when decisions are made as to the kind of a system a state agency or local district plans to develop.

It is difficult to lay down rules and guidelines by which the quality of a system can be determined, because as with costs, they vary under different circumstances and in different situations. A small system, the only purpose of which is to get student feed back for program updating and student guidance, can employ a variety of collection practices yielding data that are perfectly satisfactory for these purposes but lack the quality necessary for statistical analysis. At the same time, an elaborate system producing excellent statistical data may be of very poor quality in evaluating programs if the particular data necessary for evaluation are not planned for and built into the system. In planning any follow-up system, quality control and quality of results must be built in, but only as they relate to the purposes of the system and its intended use. In the end, this is often a matter of judgement, and differences of opinion may easily occur.

Adaptability

Adaptability is the extent to which the follow-up system can respond to changing circumstances. Ideally, the system should be able to respond to all present and future data needs without modification, but that is highly unlikely. Maximum adaptability will depend on cost, quality requirements, and the tradeoffs that are necessary to come up with the system best suited to the particular situation it is designed to serve. The point to remember is that adaptability should not be ignored. A reasonably inexpensive system can turn out to be too expensive if it cannot be adapted to changing data requirements. Within the limits of cost and quality that are possible, maximum adaptability should be an overriding consideration in the planning of any follow-up system.

There are two kinds of adaptability to be considered: data adaptability and system adaptability. The first is the extent to which data can be used for purposes beyond those known at the time the system is established, providing answers to new questions and information for new decisions. System adaptability on the other hand is the extent to which the system designed to serve one set of purposes can be used to serve others not anticipated. A good example, though not often found, would be a system which includes information about employer identity simply to know the areas of the employment market being served, which could then be adapted to getting employer satisfaction information after the 1976 Federal legislation made that a requirement.

There are two critical factors affecting data adaptability. One is the extent to which individual rather than aggregate data are collected. Individual data offer maximum flexibility; aggregate data limit the system to only those uses for which it was intended when established. The second critical factor is the form of data collected. Given the practical limits of data which can be collected without overloading the system, the selection of what will be collected and in what form becomes crucial.

System adaptability is necessary for use in a changing environment. It includes the extent to which the system can interface with newly emerging planning and evaluation programs, the extent to which it can be used with different kinds of computer hardware and software, and the extent to which it can be used in a changing political or legal environment. It is not generally possible to foresee the changing demands which may be made on the system or the changing circumstances under which it will have to be operated at future points in time, but to know that some changes are almost inevitable will keep the need for such contingencies in mind during the planning process. Cost and quality alone as the only basic considerations could be self defeating; cost, quality, and adaptability must each be weighed both against each other and separately in planning the best follow-up system for any given situation.

Factors Affecting Basic Considerations

While cost, quality, and adaptability are interrelated, they are also affected by any number of additional considerations. The following list is not exhaustive and should not be treated as though it were. In every situation there may be factors other than those listed. The factors listed are almost always present, and system planners will be aware of others. They cannot and should not be ignored. To do so can only result in disappointment and perhaps failure when the system is implemented.

Purpose of the Follow-up

The purpose or the reason for conducting the follow-up affects almost every decision made during the planning and design of the system. The products of the system must satisfy the purpose for which it was designed, but it might also be designed to serve additional purposes. There are two major decisions about the purpose of the system, each of which will affect other decisions.

(1) Compliance or Decision Orientation: A compliance oriented system is designed to produce only the information required for reporting data intended to show that Federal and perhaps State regulations are being complied with. It can be designed to collect only the data required and to do so as accurately as possible for a minimal expenditure of time, effort and money. A decision oriented system, on the other hand, produces data required for reporting but its primary purpose is to supply information needed for making management and policy decisions. This calls for more data than for reporting, but the main difference is that the data are more flexible and can be analyzed in a variety of ways. The compliance or decision orientation depends on a number of factors including what and how data will be collected, what kinds of analyses are to be made, what kinds of reports are to be generated, who will receive data and reports, and the uses to be made of them.

(2) One-Shot or Continuing Effort: In some cases follow-up systems or components of follow-up systems may be designed to produce information for a particular need which is not expected to recur. Most systems, however, are developed to meet recurring needs, such as when comparisons are to be made between data collected at different times or when students are to be followed up at different points in time. A one-shot follow-up would involve only temporary arrangements, while a continuing follow-up would involve longer term commitments of staff, equipment, supplies, procedures,

and financial resources. This decision will affect other decisions such as what data to collect, how data will be collected, how data will be stored and for what period of time, how extensive the documentation of data will have to be, and provisions for updating individual student files if information is to be collected at more than one point in time.

Reporting Requirements and Timelines

Regardless of the purpose for which a follow-up system is developed, reporting will be one of its functions if not the only one. Reports invariably are tied to delivery schedules, and these require timelines tracing back through the system so that each step is carried out in orderly sequence. Reporting requirements and timelines are often based on more than one delivery schedule to meet the needs of such groups as:

1. Federal agencies, i.e. the U.S. Office of Education and the National Center for Education Statistics.
2. State agencies, i.e. the State Department of Education and the State Legislature.
3. Other data users, i.e. the State Advisory Council on Vocational Education, placement or guidance personnel, local planners, administrators and teachers.

Meeting reporting requirements and setting timelines are often very involved and difficult decisions in planning a follow-up system, and will have direct effects upon as well as be affected by the cost, quality, and adaptability of the system. There are a number of considerations that may have to be made, including:

1. The stability of reporting requirements and schedule, and therefore of the timeline, i.e. the extent to which kinds of data and when they are needed are likely to change.
2. Sophistication of users and their needs: Simple compliance oriented reporting systems create relatively few problems in the consideration of cost, quality, and adaptability. Decision

oriented systems may be fairly uncomplicated also, but depending on the needs of all of the user groups it may be advisable to consider a certain degree of sophistication. This is particularly true as it relates to the areas of analysis and reporting.

Simple frequencies with bar or pie charts may be the most appropriate analysis and reporting techniques for certain data items and audiences whereas cross tabulations showing the relationship between variables may be more appropriate in other instances. Decisions related to the collection of categorical or interval data must be keyed to the type of user need. In making decisions about reporting, the potential for misunderstanding by any user group must be kept in mind. For these reasons it is important that, in planning a follow-up system, more information about data users' needs should be obtained than simply the data items requested. If this is not done, the requested data items may be collected and reported in a form inappropriate to their needs.

Population Characteristics

Among the most important factors affecting cost, quality, adaptability, and major design decisions of a follow-up system are various characteristics of the student and/or employer population to be followed up. These include:

1. Size. The number of persons in the population is an obvious factor in the cost and the amount of work required in establishing and operating a follow-up system. A large population may require the use of a sample to limit the cost, but that requires expertise and quality control beyond what is necessary in a follow-up of the census or total population. In a small population the use of sampling techniques may not be appropriate. In either case there are other advantages and disadvantages which will have to be weighed, but the size of the population will be a major consideration.

2. Geographic dispersion and/or mobility. Some student populations are highly mobile, such as migrant labor and some inner city groups. Others, e.g. some rural and small town neighborhoods, are fairly stable. The dispersion of the population is affected by the characteristics of the locality as well as the population's mobility. All of these factors must be considered in designing the follow-up, because they will affect its cost and other major considerations as well as methodology. Response rates are particularly sensitive to mobility of the population and dispersion may increase the cost and effort of contacting non-respondents.
3. Uniformity. The similarity or lack of similarity of persons being followed up will affect the size and kinds of sample to be used if sampling is considered. It also affects the kinds of questions asked, the design of the questionnaire, and the rate of response. It is an extremely important factor which too often may be overlooked.
4. Special characteristics. Individuals with handicapping conditions are enrolling in vocational education programs in increasing numbers. If the population includes former students who have sight, hearing, mental, reading, language or other handicapping conditions, this must be considered when developing instrumentation, selecting data collection methods, selecting a sample design if sampling is used and other decisions. Developing procedures that will make it possible for, and encourage, individuals with handicapping conditions to respond can be both challenging and costly. However, it is important that their input be obtained if improvements are to be made in meeting their needs.
5. Subject status. It is more difficult to locate and obtain responses from some individuals than from others. Former students who are unemployed or left programs prior to completion are possible examples. The amount of time that has elapsed since subjects left the program affects how easily

they can be located and a response obtained. When seeking information from groups that have traditionally been difficult to locate or get responses from what data will be sought and how are very important considerations.

Existing System Components

What already exists invariably affects what is being planned, even if an existing system is to be totally replaced. In most cases existing systems are not totally replaced, however, and planning a system or part of a system may require that major consideration to be given to the remaining components. The following are examples of such components:

1. Existing equipment. This is probably the most important single constraint on a new system if it is already on hand and must be used. There are limitations, especially in older equipment, which restrict questionnaire form, type and quantity of data collected, procedure selected for data collection, analysis and compilation, and survey population. Consideration of these limitations must be weighed in terms of an existing advantage-ownership of existing equipment can greatly reduce the cost of a new follow-up system.
2. Existing software. This is related to existing equipment, and exists if such equipment is a consideration. Its importance lies in the cost of writing new computer programs versus the additional value of the system and the information it produces by doing so.
3. Existing personnel. This includes data processing personnel and also those who will have responsibility for the collection and validation of the data. If no automated system existed, the individuals who have previously gathered and compiled follow-up data manually may have to be considered. Changing personnel is often more difficult -- and may be more inadvisable -- than changing equipment. Special training or personnel reassignments may be necessary.

Planning a follow-up system or part of one could be an exercise in futility unless personnel considerations are included almost from the beginning.

4. System interface. The follow-up is rarely an information system standing alone, and in designing a new follow-up or a new component of an existing system, its required interface with other systems, existing or planned, will be a vital consideration. Usually it must interface with an enrollment information system and it may very well have to interface with other educational, planning, financial, and reporting systems. Any or all of these may complicate the planning of the follow-up, but they may also increase the options available.

Legal Considerations

The only legal considerations that would ordinarily affect the design and development of a follow-up system are those dealing with privacy. State and federal legislation have been implemented to guarantee the privacy of individuals and protect the confidentiality of certain data which appear on student records. There is no problem when a local school or district is following-up students whose names and addresses and other private information are in the institutions own records. There have been problems, however, in a few states in allowing private student information to leave the local school or district for use in a State-wide data collection system. If names and addresses of students cannot be obtained by a state agency a state follow-up system will have to be designed in such a way that the local schools have responsibility for collecting the data.

In at least one State and probably others, the State educational agency discontinued its direct follow-up of students when faced with a legal prohibition against obtaining names and addresses or identifying student numbers. It would not have been necessary to discontinue collecting individual student enrollment data if non-identifying sequential numbers were used. The State follow-up could also have been continued by sending the forms to local schools for mailing, and individual data could still have been linked with enrollment data through the file numbers without revealing the identity of individual students. Individuals planning a follow-up effort should consult with the State Attorney General's office to identify and clarify the state regulations which affect the collecting and/or reporting of student data.

Federal Regulations which affect the efforts to conducted follow-up are the Family Education Rights and Privacy Act (Public law 93-380 as amended by section 24 Public Law 93-568) and the Federal Freedom of Information Act, Title 5 USCA 552. Both acts cite several regulations which affect the collection and reporting of individual data. Requirements of the Family Educational Rights and Privacy Act which affect vocational education and the section of the act which may be referred to for more clarification are:

1. the student (18 years or older or attending an institution of post-secondary education) or parent/guardian must give written consent for use of a student's records. (4d) (6bI)
2. data may be given to an authorized agency for analysis purposes as long as the data cannot be identified with individual subjects. (B) (C)
3. state or federal agencies may be granted access of records if it has been determined that a legitimate educational interest exists. (6A-I) Examples are:
    - school officials for specified purposes
    - official of other schools to which a student may transfer
    - parents of a dependent student
    - sponsors of financial aide
    - authorized government officials
    - organizations conducting school related studies
    - professionals requiring records in health or safety emergencies
4. "directory information" can be released to anyone without getting prior permission (5A)

The Act provides that information used for education purposes such as follow-up: must give assurance to respondents that the information is held in confidence and that only aggregate data will be publicly disseminated.

Legislation which affects data gathered on former students, now employees, is the Federal Privacy Act; Title 5USCA 552A. This legislation requires employers to maintain record confidentiality. Most large employers will be aware of the laws which apply to the collection of data on employees. In general, guidelines require that:

1. a waiver to release information should be signed by either the employee or if the employee is under the age of 18 then by a parent or guardian.
2. the employee should be informed that follow-up data is being collected, what agency is collecting the data, the purposes for which it will be used.

The guidelines and regulations reviewed suggest that pupil records are not "public records" nor are they "private records." Pupil records are quasi-public records because they are generally required by law to be kept, are supported by taxes and serve an important public function. Yet pupil records are "private" in the respect that they contain personal data about individuals. Therefore, educators conducting vocational follow-up efforts should be aware of the balance between the right of the pupil and the right of the state.

It is suggested that the specific procedures to be used in the student and/or employer follow-up be reviewed by school division or state educational agency level personnel. Existing systems and modifications should also be submitted to review in light of recent legal interpretation of the relevant laws.

Political and Ethical Considerations

Aside from the possibility of legal restrictions affecting the design and thus the cost as well as the quality and adaptability of a follow-up system, there are often restrictions of a political or ethical nature which must be recognized. Some of the most important and most frequently encountered are the following:

1. Safeguarding data access and use: Anytime a school district or State agency collects information about individuals it incurs the responsibility of assuring that such information is accessible only to those who are supposed to have it. The data must also be used only for purposes which are within the proper role of public education. Unauthorized access or improper use of the data may not only be harmful to the individuals affected but can result in distortions, and unjustified interpretations. These can be used to shield a poor performance record from public view, or to discredit programs and individuals unjustly, or to grind any number of political axes.

   On the other hand, too much zeal in safeguarding educational information from public access can be equally indefensible and improper. When planning the follow-up it is best to consider at a fairly early stage what safeguards will be necessary to prevent misuse of the data without infringing on a proper public interest. In doing so, political realities are sometimes more important than abstract ideals, although neither should be ignored. What is most important is that some thought be given to this matter at an early state in the planning rather than ignoring it and running into trouble later.

2. Dissemination: Apart from access to and use of the data, the way they are distributed -- to whom and in what form -- may also involve political or ethical considerations. Obviously the data must be disseminated to a number of persons and groups or the cost of its collection cannot be justified. Just as obviously, the data cannot be disseminated to an unlimited number of users or the cost of dissemination would overburden the system. So, who is to be included and who gets left out?

   Even more importantly, in what form or forms will the data be disseminated? Obviously again, all of the data collected cannot be disseminated; the sheer bulk would make it impossible, and without organization the data would be largely unintelligible. Aggregations, compilations, and analyses must be made. The question to be considered in planning the system is what kinds of aggregations, compilations, and analyses are appropriate. A second question is, to what extent will they be disseminated only with interpretative explanations by knowledgeable persons? Many follow-up system planners and developers seem to ignore this consideration, yet to do so can result in a variety of political and ethical problems.

3. Reasonable promises and claims: There is often a difference between what the developers of a follow-up system would like to be able to do and what they actually accomplish. Unfortunately, this difference may become blurred in the glow of proprietary enthusiasm.

   Promising more than can be delivered either in data quality or in the kinds and variety of data output will almost certainly run into political and ethical problems. This is particularly true when seeking or maintaining financial support. It is also true when involving individuals and groups in the development of the system. Planning a follow-up system must be realistic and even restrained in terms of the data it will be expected to produce. This does not mean that goals should be low and effort should be limited. Enthusiasm is necessary in every enterprise, and a follow-up system's maximum potential has to be a constant consideration in its planning. But the political and ethical problems which will be almost inevitable if enthusiasm alone is translated into promises and claims can seriously distort the cost, quality and adaptability of the system being planned.

Climate of Acceptance and Support

After every other factor affecting the planning of a follow-up system has been considered, there is one more which can be the most critical of all. The attitudes of persons and groups involved toward one kind of a system or another, or toward any kind of a follow-up, may determine what is eventually done. A very careful assessment of such attitudes and support early in the planning stage is essential. If the situation is positive, there are advantages in knowing this early and in knowing where support is strongest and where it is less strong. If the situation is negative, it need not be hopeless. Negative attitudes and lack of support may be evident because of circumstances with which one can deal. The following are examples, but there may be others just as important.

1. Previous experience: A satisfactory history of collecting follow-up information in a community or State would help considerably in planning a new system or part of a new system, but the opposite may often have to be expected. There have been numerous experimental efforts based on a trial and error approach which have not been well designed or carried out and which have left a certain amount of antagonism in their wake. One State system, for example, was picked up by a private company organized for that purpose and sold to several other States, where it failed in each case because the company could not duplicate the technical competence needed to make it operate. In many States and school districts the only experience with follow-up has been with a manual system and to suggest the use of a computer creates apprehension.

   Whenever there has been a previous unsatisfactory experience or relatively no experience, special efforts may be necessary to overcome negative attitudes. A public relations program to clarify the kinds of data to be collected and how they will be used is often advisable. In general, the more information that can be provided about the way the follow-up is being planned while still in the planning state, the more acceptance and support it will receive, especially if there have been previous problems with attempts to collect follow-up data. Without some effort to inform the persons and groups who will be involved with or affected by the follow-up, a memory of earlier experiences will in most cases create resistance rather than acceptance and support.

2. Fear of evaluation: Most persons are probably less than enthusiastic about having the results of their work evaluated, and follow-up is often viewed by vocational teachers or administrators as a kind of backdoor evaluation. It is always advisable to provide as much feedback as possible to instructional and administrative staff, and to consider their suggestions about data to be collected and the ways they are to be used. Here again a public relations program serves the purpose not only of reducing opposition because of previous experience but also in overcoming too great a concern about the evaluative uses of follow-up information. A focus on the non-evaluative purposes of the follow-up can at least make skeptics aware of many positive aspects.
3. School-community relations: The general nature of the relationship between a community and its schools, or a State and its educational establishment, can greatly affect the development of a follow-up system and the decisions that have to be made in its planning. A close and positive relationship between vocational education and employers will present a much different situation for employee follow-up than one in which employers have not been involved directly in the schools' programs.

The support received from parents in locating former students or supplying data for them will also depend to an important extent on the overall school/community relationship. If a community or a State differs over educational issues such as teacher strikes, tax support, or busing it will be more difficult to develop a follow-up system. Follow-up data collection is dependent upon voluntary cooperation from students, parents, and employers. If friction and tension exist over any issue in the educational system, the only way to obtain that cooperation will be to build into the system a program of public relations designed to gain the support needed to make the system work. This is a difficult but by no means impossible step to include in the planning process.

DEVELOP SYSTEM PARAMETERS

Major Follow-up Activities

There are various opinions about what the major activities are in planning and conducting a follow-up. Exactly what names are given to the activities and what each encompasses is not important as long as they are inclusive of what must be planned. Whether a new system is being developed or an existing system is being modified, the steps are usually the same but with a different emphasis. This guide deals with the major steps without limiting them either to a new system or a new component or modification.

Most systems which have been described in the literature have lists of major activities, and a number of them can be found in the procedures manuals cited in the companion document to this guide, Follow-up Procedures: A National Review. Three are summarized here to illustrate both their variety and their similarities.

The Minnesota procedures manual for the secondary follow-up system (96) has these as major tasks, activities, or concerns:

(1) Identification of School Leavers and Sub-Groups
(2) Collection and Coding of Base Information
(3) Preparation and Mailing of Questionnaires
(4) As Questionnaires are Returned
(5) Non-Respondents
(6) Coding
(7) Preparation for Data Summary

An additional task is listed in Minnesota's report of the follow-up results: Training and Monitoring. (98)

The report of a follow-up of Secondary BOCES Graduates in New York (235) lists these as the major tasks:

(1) Accomplishment of Preliminary Research Data
(2) Development of the Survey Instrument
(3) Procedural Responsibilities
(4) Collation of Materials

(5) Analysis of Survey Response
(6) Final Report

A more extensive list of tasks is found in the Operations Manual of the California Student Accountability Model (64):

(1) Prepare Follow-up Matrix
(2) Decide on Purpose(s)
(3) Select Group(s) from Matrix
(4) Assign Responsibilities
(5) Prepare Students for Follow-up
  (5A) Determine Sample Size
(6) Prepare Target List of Names
  (6A) Select Methods(s)
  (6B) Select or Construct Instruments
(7) Prepare Time Schedule
(8) Collect Data
(9) Analyze Data
(10) Disseminate Findings
(11) Make Appropriate Program Adjustments

A synthesis of the major tasks most frequently cited and which research and experience indicate are essential has been developed. There are ten:

(1) Determine Potential System Goals
(2) Develop System Timelines
(3) Make Major Operational Decisions
(4) Define Population
(5) Specify Data Elements
(6) Specify Study Type, Design and Methods
(7) Develop Instrumentation
(8) Collect and Analyze Data
(9) Prepare Reports and Documentation
(10) Evaluate and Modify the System

Determine Potential System Goals

An examination of follow-up reports, guides and manuals from across the country indicates that only a small percent actually state the goals or objectives of the follow-up. This is an unfortunate omission. A study completed by the Center for Vocational Education (116), reported the most frequent reason non-respondents failed to respond to follow-up questionnaires was the lack of perceived importance. Sixty-one and one-half percent stated that a better explanation of the purposes of the follow-up might have prompted them to respond.

Goals and objectives, even if not stated, are often implied by the type of data collected or reports prepared. A summary of goals and objectives listed for the follow-up studies reviewed is available in the companion document. From that summary, it is possible to analyze in retrospect what seems to be necessary in developing potential goals for the follow-up system. Some of the major purposes of any system will be mandated by local, state or national requirements for reporting, and these are not likely to be ignored. If they are the only purposes, however, the system may be both inefficient and ineffective. Only a systematic approach to goal setting will achieve maximum usefulness and also focus attention on the three overriding design considerations of cost, quality, and adaptability. The following steps are suggested as a way to proceed.

Identify Potential Data Users

Logically, a follow-up system should be designed to best meet the information needs of its user groups within specified cost and time constraints. Certain of the user groups are conspicuous by their recurring data requests, e.g. local administrators, state departments of education and the Federal government. Other potential users of follow-up data may not be as obvious. These could include the vocational instructors themselves, school guidance personnel, business/industry/labor associations or representatives, local and state service area supervisors and administrators and the general public. On the other hand, the system cannot be all things to all people without overloading the design and probably the cost. A selection has to be made. Two ways of making the selection are: (1) Develop a set of general data classifications and consider who might have a need for the different types of data; and (2) use a broadly based advisory group to identify potential users and their data needs.

In the first approach, known data elements should be classified, then a projection made of what groups would have a legitimate use for and interest in each identified data type. As an example, data which may be collected from employers could be classified as (1) evaluation of employee knowledge and skills, (2) evaluation of employee characteristics such as punctuality, cooperation, etc., and (3) satisfaction of employers with employees and the employees' training. Each of these categories may have many specific data items of interest. Ratings by employers of vocational graduates' skills could be used in a global sense for program evaluation by administrators or in a specific sense by instructors for course evaluation and revision. Employee characteristics data may indicate to instructors a need for refocusing instruction on non-technical employment skills. Guidance personnel may also wish to use such data as input to the design of additional or revised guidance procedures. The employer ratings of the vocational students' training is a requirement under the emerging National Vocational Education Data Reporting and Accounting System (VEDS).

In the second approach, a general advisory committee can be a good source of suggestions and advice in the identification of potential data users. Such a committee should contain representatives from the major community groups which have a legitimate need for and interest in follow-up information. They can be given an overview of the types and uses of information to be obtained through student and employer follow-up, but caution is suggested in appealing for direct guidance. The purpose at this point is simply to identify potential users of the follow-up system. This in turn will facilitate setting realistic goals and objectives and the development of a system which will best meet the needs of such users in a cost-effective manner.

Identify Data Needs, Purposes and Timing

When a maximum list of potential data users had been identified, it is suggested that a chart be prepared which lists users, their information needs, and when they need the information. The information needs of state and federal agencies are fairly well defined, but it may be necessary to spend time working with some of the other potential user groups to clarify and define their needs. Such clarification will also assist in determining priorities of user needs and data requests during later stages of the system design. It should be made clear, of course, that this is a preliminary needs assessment, not a promise to deliver.

As a general rule, a wider base of system users will promote greater support for the system and the logical time to begin to build such support is at the needs assessment point. A given piece of information may be useful to several groups if it is collected in the proper form and at the right time. The chart or classification of users by data needs by time frame should help identify overlap of needs and promote rational decisions as to what data should be collected. By beginning with a definition of generic data types, discussions with potential users can take place within reasonable boundaries.

Develop System Goals

The process to this point should provide a maximum list of agencies or groups which the follow-up may serve and a listing of their general information needs. These will serve as primary considerations in defining the goals of the system. There are more elaborate procedures for developing goals, notably those proposed by Lightfield (122) and Project Follow-up (243). Project Follow-up developed the TEX-SIS system and used the DELPHI methodology with a statewide group of raters representing primary user groups. As noted earlier, many of the systems reviewed did not include stated goals, but to do so provides direction and assists in making key decisions later in the design process. Too many systems have been developed to provide only compliance data for reporting and evaulation, neglecting other equally important data uses. They not only face problems in adapting to new demans, but often underutilize the data which are collected.

Goals should be written to indicate the major purposes of the system but should not be tied to specific data items. As a general rule, three to five goals will adequately define the system's major purposes. Keeping in mind that no system can supply all the information everyone wants in the form in which they want it and when they want it, a preliminary assessment and setting of interim priorities of potential users and data needs should be made before settling on a final set of goals. At this point, however, a maximum set may be written. Cutting and refining the list should wait until after the next step, which is to develop a preliminary statement of objectives. The two are interrelated, each leading to further clarification of the other.

Specify System Objectives

Many spirited discussions have been held about the relationship of objectives and goals and the appropriate levels of specificity for each. For purposes of follow-up system design, objectives should serve to define each of the system goals in such a way that one can judge whether or not the objectives have been accomplished and in turn infer accomplishment of or progress toward the goals themselves. A goal is a major purpose; its accompanying objectives define more specifically the scope and content of the goal. As an example, a system goal may be "To provide information needed to complete local, state and federal reports." Accompanying objectives will further define this goal and make it operational and amenable to evaluation. Such objective might be: (1) to provide required information on the present educational status of program completers and leavers; (2) to provide information on the occupational status of program completers and leavers; (3) to provide information on employer satisfaction with the vocational preparation of program completers.

In order to obtain maximum flexibility and adaptability in the system, objectives should not relate to specific data items. The number and type of such data items are sensitive to legal, cost and methodological constraints and are subject to frequent change. Availability of funds for the system will in all likelihood involve decisions at the level of specific data items, but at this point such specification is premature.

Objectives should be written for each goal. If it does not seem possible to specify one or more objectives under a given goal, that goal should be questioned. Such a process will reveal potential overlap among the goals or unanticipated goals. When the objectives are completed, the total list of goals and accompanying objectives should be reviewed in terms of the general physical and fiscal constraints which are known to exist. Detailed cost analysis is not possible at this point, but it is not too difficult to arrive at rough estimates of comparative costs between a system designed to serve an expansive set of goals and one capable of serving some but not all of the same goals. It may be necessary to arrange the goals in an order of priority and later select all that are possible and still keep the system within the limits of cost and other considerations.

Specify Reports to be Produced

Once a realistic set of goals and objectives have been determined and the user groups identified, the reports which may be generated should be listed. Again, cost or other constraints not yet adequately defined may force modification of this list. Such a listing, however, will help define the level at which data should be aggregated and provide some guidance in operational decisions later in the planning process. Actual report outlines will not be prepared until after defining the specific data items, but the nature of the reports and their general content should be specified at this point.

Develop System Timelines

Most, but not all, systems operate within an annual cycle tied to the school year, but at the same time must provide information to a variety of users with different time constraints. Some will be regulated by fiscal years, the calendar year, legislative calendars, budget schedules, or simply periodic demands. To some extent developing a general system time frame goes hand in hand with developing the system's potential goals, because these are often limited by the ability of the system to provide information on a timely basis. This does not mean that detailed scheduling of each activity should be undertaken early in the development of the system, but that timelines be identified within which the beginning and completion of major activities can be planned and pertinent deadlines established.

Determine Major Deadlines

These are often peculiar to the local situation, but the deadlines for reporting under the Education Amendments of 1976 (P.L. 94-482) are specified. The annual accountability report is due by July 1 of the year following a given school year. Beginning in 1980, the National Center for Education Statistics (NCES) plans to require that the completer/leaver follow-up be conducted in April of the year following program exit (Proposed VEDS Guidelines, 5/11/78). These will be key dates in the planning of any follow-up system which is intended to meet Federal reporting requirements. Local planners must also allow time for State personnel to compile, analyze, interpret and report the data which will be used in Federal reports.

Efforts must also be made to identify other deadlines which will affect or be affected by the operation of the follow-up system. The extent to which State and local agencies have their own reporting mandates should be investigated by planners of a follow-up effort. It can generally be assumed that every potential data user has a time frame within which data must be made available if they are to be useful. These deadlines should be examined for conflicts and compatability.

Conflicts may indicate a need to reexamine the extent to which certain data users' requests can be met. In some instances it may be possible to persuade potential users to modify either the data requested or the deadlines for delivery.

Occasionally planners may find that the follow-up is relatively unencumbered by reporting deadlines. When this is the case, the critical issue is the timing of the actual data collection, which in turn should be planned so that the information obtained is best able to answer the questions the follow-up is intended to address. Some of the problems related to the timing of data collection are discussed by the Southern Regional Education Board (197):

> Surveys that take place soon after graduation have the following disadvantages:
> 1. Graduates may not have settled into their first permanent job.
> 2. Graduates. . .may not. . .be able to make any judgement about the quality of their preparation.
> 3. Graduates' plans are still in a state of flux, so that actual outcomes are not yet available.
> 4. Graduates have not been away. . .long enough to permit a dispassionate evaluation of their. . . experiences.
>
> Surveys that take place very long after graduation have the following disadvantages:
> 1. Intervening developmental experiences may cloud the graduates' perspectives of how (their training) affected what has occurred by then.
> 2. Addresses become outdated the longer the interval from graduation.
> 3. Response rates drop as time between graduation and surveying increases.
> 4. Survey instruments must become more complex the longer the time interval between graduation and surveying since they must distinguish between various possible events occurring since graduation (e.g., first and subsequent educational experience, etc.). A survey instrument designed to collect information more than one year after graduation tends to elicit longitudinal information rather than information about what is happening to the graduate at one point in time (pp 16-17).

Develop Major Activities Timetable

After the major deadlines have been identified, a general timetable can be developed which should pinpoint the beginning and end of each major activity during planning and conducting the follow-up. It is not necessary that all tasks within these activities be scheduled. In many instances it may be impossible to do so. The purpose of developing the timetable is to identify overall time constraints and to avoid scheduling conflicts and inconsistencies. A good way to begin is to select the single most important deadline the system has to meet and work backwards. In this way the maximum amount of time for conducting the follow-up and each activity can be established, and all of the components and subactivities will have to fit into the schedule or be dropped. Planners should try to identify those activities which can be conducted concurrently, and to assign blocks of time to all major activity.

Upon completion of this process, the overall timetable should be reviewed, focusing on two specific questions:

1. Is it realistic to complete the follow-up effort in the time available and maintain reasonable cost, quality, and adaptability?
2. Can the follow-up be completed in less time and maintain reasonable standards?

General goals and objectives should now be re-examined in light of these questions. If it is unrealistic to expect the follow-up to be completed in the time available to achieve original goals and objectives, they may have to be reviewed and those of lowest priority eliminated. To do so is often difficult and sometimes impossible, but scheduling problems have to be resolved before the system design is completed or there would be no point in going ahead with it. Sometimes it is apparent that the follow-up can be completed in less than the maximum time available, and when this happens it may be possible to expand the number of user groups and requests for data. Earlier completion of the follow-up should also be evaluated in terms of cost and effects on the quality and flexibility of the data.

Make Major Operational Decisions

Several major operational decisions must be made before the actual follow-up system can be designed and specific procedures identified: how to process the data; whether the follow-up should be conducted "in-house" or by a contractor; whether the system should be centralized, decentralized or partly decentralized; and whether data will be collected continuously or at regular intervals. While the overriding considerations of cost, quality and adaptability are most important in making these decisions, factors peculiar to the local situation must also be reviewed. Examples are: general characteristics of the population, reporting deadlines, present system components, and politics.

How to Process the Data

A major decision to be made is whether the data will be processed manually or by machine. Advantages and disadvantages can be found either way. Manual processing requires little equipment and may be relatively inexpensive. However, this is only possible when small amounts of data are to be processed. The disadvantages of manually processing data are that an extensive training program for staff is required, data processing is slow, and the potential error rate is high. When large volumes of data must be processed, the salaries of personnel required plus the cost of training and potential for error make this alternative less attractive.

The major potential advantages of machine processing are that large amounts of data can be processed quickly with a minimum of support personnel and a high degree of accuracy. This has potential for lowering overall costs, and when properly designed, machine processing also increases the adaptability of the follow-up system. On the other hand, cost reduction through machine processing depends on equipment already being available and on its efficient use. Furthermore, machine processing assures high quality results only if well-trained personnel are available, programs are carefully written and tested, and data collection instruments are meticulously prepared. Generally, when small amounts of data are to be processed, manual processing is less expensive and can be just as accurate as machine processing. Large quantities of data are likely to cost less in the long run, result in more accurate data, and have greater adaptability when processed by computer.

Details that have to be considered when making this decision are the availability of equipment and technical staff, the number of people to be surveyed and the amount of data to be collected from each, and the kinds of information and analyses to be produced. Even if equipment is not available, machine processing should not be ruled out. One thing to keep in mind is the possibility of larger numbers and more data elements in years to come.

The kinds of information and analyses to be produced have a very important bearing on whether to use manual or machine processing, since manual processing virtually rules out all but simple tabulations of data. Numbers and percentages of students who complete certain programs or are employed compared to another group can be done by hand, but only at a high personnel cost and even then the probability of error is high. If the objectives are very specific and the follow-up is to be conducted only once, manual processing may be advantageous. Otherwise, machine processing should be seriously considered.

Investigate Possibility of Contracting

It is unwise for planners to overlook the possibility of having part or all of the follow-up conducted by another agency or private firm. A number of possible contractors might be considered. For example, colleges and universities have often conducted follow-ups for State and local agencies. Other State agencies may have the equipment and technical personnel to do it. Private consulting firms and research organizations may be available with equipment, personnel and experience which would be difficult to equal. However, caution is advised in considering contracting with any organization, public or private, which does not have a well established record of performance in this area. Glowing promises and attractive brochures are no substitute for demonstrated experience, and there have been a number of costly failures from contracting with inexperienced or inadequately staffed outside organizations.

Actually, the follow-up has two major divisions, development and operation, and while both of these could be contracted it is probably not advisable to do so for development. A considerable amount of work has been done in designing existing systems and information about them is readily available in the literature. Moreover, since development includes a number of steps which can only be taken by the agency itself -- determining proposed objectives, for example -- to contract this part of the follow-up would be inefficient at least and probably self-defeating. That is not to say that some parts of system development should not be contracted or handled with consultant aid, but previous experience indicates that it is doubtful that a contractor can develop a suitable system from beginning to end or without considerable help from the contracting agency.

There are advantages, on the other hand, of contracting some or all of the operation of a follow-up after the developmental work has been done. Many agencies or firms have equipment and expertise not readily available to local school districts or State agencies. Using them has the potential for decreasing overall costs while increasing adaptability and expanding capabilities. Moreover, credibility is sometimes increased since specialists are performing the job. The most important consideration to keep in mind is whether the contracting organization actually does have the expertise and that this has been demonstrated through quality performance at reasonable cost for other agencies or school districts.

If the follow-up or any part of it is contracted, provisions should be made for supervision by the contracting agency. Requirements for liaison personnel should be an important consideration.

Without adequate liaison and supervision the contracting agency may find itself at the mercy of the contractor regarding such critical issues as cost, quality, and adaptability of the data. A related problem is that of return rate. Unless careful preparation is made, low return rates may result from former students not being familiar with the data collection agency. Many other factors must be considered when deciding whether any or all of the follow-up effort will be done by contract. Primary among these are legal constraints, the anticipated longevity of the follow-up effort, political considerations, in-house capabilities, and data security. These factors often must be considered in terms of how they affect each other. For example, should it be desirable to machine process the data but the equipment is not available "in-house," a reasonable alternative would be to contract the data processing phase. However, if it is expected that a follow-up effort will be conducted annually for the foreseeable future, it may be less expensive to purchase the necessary equipment, especially since the cost of equipment has been drastically reduced in recent years.

Centralized, Decentralized or Hybrid

Any given follow-up system may be operated as a totally centralized, a decentralized or as a hybrid system. A centralized system is one in which one central location and staff perform all the major follow-up activities. An example of this would be a Statewide follow-up in which schools are asked to supply certain enrollment and termination information to the central system which then carries out all the normal follow-up functions including preparation and dissemination of reports. A decentralized system is one in which each school or program within a school conducts its own follow-up. Any system which is somewhere between these two extremes is called a hybrid system. There are a number of State centralized systems, decentralized and hybrid systems. Some school districts operate centralized systems which serve all the schools in those districts, and frequently each local school conducts its own centralized follow-up for all programs in the school. The definitions used are therefore not dependent upon the size of the effort but rather upon its organization. Whichever system is developed will depend to a considerable extent on the results of decisions reached in the two previous sections of this chapter.

The requirement for increasingly uniform data for Federal reporting may suggest State centralized systems, but the benefits of local operation of at least certain functions argue for decentralization. A compromise already operating in some States is the "hybrid" approach wherein there is centralized research and development, forms production, data analysis, and reporting, but with local agencies actually making the student and employer contacts. Two examples of this type of approach are the Minnesota Secondary School Follow-up System and the TEX-SIS system for community and junior colleges in Texas.

The Minnesota Secondary School system as described by Irwin and Copa (96) includes system development, instrument design and testing, procedural research, staff development and data analysis and reporting all being conducted by a central university staff. The actual mailing of questionnaires, telephone contacts and data coding are carried out by the participating local schools. An added advantage gained through this arrangement is that the local system can add its own questions to those on the standard follow-up forms. These and the core questions can both be analyzed and reported by the central staff. There are a number of advantages in such a system including involvement, potentially better return rates, and use of local clerical personnel for such tasks as mailing questionnaires and coding the data.

In the TEX-SIS system as developed by Project Follow-up (243), the Texas Education Agency contracted with Tarrant County Junior College to manage the developmental work. Most of the State's two-year colleges participated in the development at some stage, with several sub-contracting for components of the system. In operation, any institution may use one or more of the follow-up forms, questionnaire or procedures developed by the project. The coded questionnaires, data tapes or punched cards resulting from such use are then sent to the central system for processing, analysis and report preparation. Local data are analyzed and returned to the originating institutions while State-required data are automatically pulled and aggregated across institutions. Local schools also have the option of using their own questionnaires and procedures rather than the ones developed by the system as long as data required for reporting and analysis meeting established standards of quality are obtained.

DESIGNING THE FOLLOW-UP SYSTEM

The goals and objectives, time constraints and major operational procedures of the proposed follow-up system describe the boundaries within which it must be designed to operate. After these are defined the actual design of the system can begin. There are four major steps: (1) define the population to be followed-up; (2) specify the data elements to be collected; (3) specify the study type, design and methods to be used; and (4) develop the necessary instrumentation.

Define the Population

To some extent the population being followed-up will be defined by the goals and objectives of the system, but it is necessary that it be defined in considerable detail. Exactly who is followed-up and the special characteristics of those individuals will have an affect on methodological decisions as well as the results. An example of the problems often encountered in deciding who will be followed-up is the definition of who is a vocational student. Controversy has surrounded this definition since the inception of Federal reporting requirements. Unless system planners pay careful attention to the establishment of specific operational definitions of the population, the quality of the data obtained will be suspect. Moreover, the outcomes of the follow-up are likely to be influenced, often in a negative manner. One of the best ways to define a population is to describe its relevant characteristics.

Determine Relevant Characteristics

VEDS requires that follow-up data be reported on students having certain characteristics, i.e. at the secondary level only those persons enrolled in 11th and 12th grade programs supported by public funds for which credit toward a high school diploma is given and which are designed to prepare them for employment in specific occupations. Post-secondary vocational students are those persons enrolled in publicly supported vocational programs which terminate in Associate Degrees. Individuals in publicly supported vocational programs leading to certificates or licensure, in apprentice programs, or in programs not classifiable as secondary or post-secondary but are of at least 500 contact hours in length are reported as adult students. (Note: At the time this document was in preparation, VEDS was still undergoing modifications. Planners should refer to the latest VEDS materials.) This is an example of the type of specificity planners should attempt to achieve in defining the population.

There are a number of relevant characteristics which should be considered when describing the population. Which former students or employers will be included may be defined by such characteristics as the student's completion status, employment status, curriculum pursued, and exit date. Additionally, planners should consider several general characteristics of the population such as size, accessibility and dispersion. The description of the population not only provides information about who will be followed-up, but also provides information that is useful in determining what data should be collected and which data collection methods are likely to be most successful.

It is important that system planners thoroughly review the stated goals and objectives of the system before describing the population. For example, if one of the objectives is to investigate how youth perceive vocational education, it makes little sense to ask only vocational students. Students who chose the pre-college or general curriculum can probably provide information that will be more useful in assessing the image of vocational education than those who chose the vocational curriculum.

Identify Subgroups

There are two major reasons for defining subgroups within the population and their important characteristics. First is the importance such groups have upon methodological decisions. For example, if a substantial proportion of the population is academically handicapped, mailout questionnaires will have to be very carefully designed for low reading level comprehension. Likewise, if the population includes a number of individuals whose primary language is other than English, a bilingual or multilingual questionnaire may be necessary.

A second reason for carefully identifying the subgroups is related to the goals and objectives of the follow-up. If one of the objectives of the effort is to determine how females who are trained in traditionally male occupations succeed in the job market, it is important to insure that information is obtained from an adequate number of females. If a sampling technique is to be used, it must be one which will insure such representation.

These are but examples of how research methodology and what data are collected are affected by the existence of subgroups within the population. Examples of groups that may be important are ethnic groups, handicapped or disadvantaged students, school drop-outs, under achievers, program or service area groups, males and females, students in each geographic region, and unemployed graduates. The extent to which any or all of these groups are represented in the population, combined with the desirability of being able to provide data regarding each group, determines the affect their existence has on methodological decisions. One thing to keep in mind, of course, is that maximum adaptability of the follow-up system is most easily achieved if the population is described in considerable detail.

Specify Data Requirements

There is always a temptation to sit down and start writing the questions or designing the form to be used in the follow-up, but this cannot begin until the data that are going to be required are specified. The system's goals and objectives provide the framework within which that identification process should take place. For example, if a system objective is to secure data for meeting the reporting requirements of VEDS, then an analysis of the VEDS requirements will elicit a number of data elements which must be included.

Identify Data Elements

A data element is a generic data category. A category or element such as employment status will normally include a number of more specific data items such as length of employment or unemployment, full or part time employment, why unemployed, relatedness of employment to training program and salary. The specific data items are the basis for actual instrument development.

At the most general level, two categories of data are evident -- (1) data acquired from students and/or their representatives and (2) data acquired from employers. Data elements which may be included under each of these broad classifications are:

From Students

- Present Employment Status
- Present Educational Status
- Employment History
- Employment Satisfaction
- Earnings
- Evaluation of Training
- Evaluation of School Services
- Recommendations to School

From Employers

- Employee Job Knowledge
- Employee Job Skills
- Employee Work Attitudes and Characteristics
- Employee Satisfactoriness
- Evaluation of Employee's Training/Preparation
- Recommendations to School/Program

These are data elements which have been included in student and employer follow-up instruments. Any given system may have unique requirements beyond the elements listed or may collect less information than indicated by these lists.

Required data elements - Most systems are not designed to collect what is primarily "nice to know" information. The whole purpose of developing and operating a follow-up system is to provide required or "must know" information to decision makers at local, state, and federal levels. The most pressing need at present is data to meet the requirements of VEDS. General information related to follow-up was mandated in the 1976 amendments, and the VEDS project was developed by the National Center for Education Statistics (NCES) to insure compliance with those mandates. The data which States must supply to NCES through VEDS include three general types: (1) Program Enrollment and Termination data, (2) Completer/Leaver Follow-up data and (3) Employer Follow-up data. Each of these in turn includes a number of data requirements. The following are requirements under VEDS (Communication from NCES, March 1979).

Program enrollment and termination data: Information is to be provided only for those programs covered by the State Plan. The reporting form is divided into three parts: Part A, provides information on occupational preparation enrollments and terminations who may be included in the follow-up; Part B, provides data on program enrollments and terminations for whom there will be no follow-up activity; and Part C, provides data on the instructional settings of handicapped enrollments.

Part A - provides information on six-digit OE code programs specifically designed for occupational preparation, 11th grade and above.

SECTION I	provides an unduplicated count of total instructional program enrollments during the reporting year
SECTION II	provides unduplicated total counts of program enrollments by racial/ethnic group by sex
SECTION III	provides unduplicated enrollment counts by program level
SECTION IV	provides enrollment data on Short-Term Adults
SECTION V	provides unduplicated counts for those enrollments with special needs--students classified as handicapped, of limited English proficiency, or disadvantaged

SECTION VI	provides unduplicated counts of enrollments in cooperative vocational education
SECTION VII	provides unduplicated counts of those students who complete, transfer from, or leave a program for any reason during the reporting year.

Part B - reports other occupational preparation and support programs not included in Part A. Separate reporting categories are provided for the following:

(1) Occupational Preparation: for persons below 11th grade enrolled in occupational preparation programs, persons at all levels enrolled in courses prerequisite to a six-digit OE code program, or a program or activity that leads to more than one six-digit OE code program

(2) Consumer and Homemaking (09.01) programs

(3) Industrial Arts programs

Sections I through V of Part B parallel Sections I through V of Part A.

Part C - "Enrollments of Handicapped by Type of Instructional Setting," provides unduplicated reporting of handicapped enrollments by instructional setting.

Completer/leaver follow-up: The Completer/Leaver Follow-up Report is divided into four parts. Part A describes the employment status of the follow-up sample by instructional program. Part B describes the employment status of the follow-up sample by racial/ethnic designation and sex. Part C describes the employment status of those individuals in the follow-up sample who are handicapped. Finally, Part D presents, for each program, the field of employment and average hourly salary of those individuals in the follow-up sample who were employed.

The classifications used for reporting Completers' and leavers' Employment Status are the following:

(1) Employed in a Field Related to Training (Civilian)
(2) Employed in a Field Related to Training (Military)
(3) Employed in a Field NOT Related to Training, NOT Pursuing Additional Education (Civilian)
(4) Employed in a Field NOT Related to Training, NOT Pursuing Additional Education (Military)
(5) Pursuing Additional Education (Employed in Field NOT Related to Training; NOT in Labor Force or Unemployed)
(6) Unemployed (Seeking Employment) and NOT Pursuing Additional Education
(7) NOT in Labor Force and NOT Pursuing Additional Education
(8) Status Unknown

The appropriate classification for a given individual is determined from his or her responses to the items on educational status, employment status, and relatedness.

Parts B and C are not required for the report to be submitted in November, 1980. (See instructions for NCES Forms 2404-5 and 2404-7).

Employer follow-up: Only employers of students who indicated they were employed in a field related to their training, civilian or military, are to be followed-up. States may design their own employer follow-up instrument but must as a minimum include verbatim the items in the VEDS form.

Employer follow-up data are to be summarized and related to (a) instructional programs, (b) racial/ethnic/sex designation and (c) program level and completion status. The required data include three basic areas:

1. Vocational Training Evaluation - the employer rates the employee's preparation in terms of technical knowledge, work attitudes and work quality
2. Overall Rating - the employer provides an overall rating of the employee's vocational training

3. Relative Preparation - the employer rates the employee's vocational preparation in relation to individuals in the same work group who did not have such training.

(For further information see instructions for NCES Forms 2404-6 and 2404-8)

Localities and/or States will generally identify additional elements which they consider to be necessary for adequate evaluation and/or planning. For example, systems which are designed to follow-up students from all curricula rather than just vocational education may need to have more detailed educational status information such as type of school, curriculum, etc. Data collected for program/evaluation/improvement may need to be more specific than that presently required under VEDS format. Figures 1 and 2 below are suggested formats for organizing the data elements of student and employer follow-up. Two levels of specificity are provided, but at the instrument development stage more than one data item may be required for a given element. The organization of Figures 1 and 2 is adapted from the Minnesota Post-secondary Follow-up System (170).

Figure 1. Potential Data Elements-Student Follow-Up

Data Category	Potential Data Elements
Educational Status	Type of education/training since program
	Amount of education/training since program
	Type of institution in which training received
	Primary educational objective
	Relationship of education to previous program

Figure 1 (continued)

Data Category	Potential Data Elements
Employment Status	Employed/unemployed/unavailable for employment Present job title/duties Full time/part time Relatedness of present job to training program Present employer/supervisor/address Reason(s) unemployment/unavailability for employment Reason(s) for unrelated employment Salary/wages, present job How present job was obtained
Work History	Advancement Number of jobs held since program exit Employers/supervisors/names/addresses Length of employment on present or previous jobs Relatedness to training program
Job Satisfaction	Satisfaction with salary/wages/benefits Satisfaction with specific job aspects Overall job satisfaction
Evaluation of Training Program	Overall rating of training program Evaluation of curriculum Evaluation of instruction Evaluation of facilities/equipment How well prepared for job

Figure 1 (continued)

Data Category	Potential Data Elements
Evaluation of Related School Services	Employment services Counseling services Related services
Other	Suggestions/recommendations related to program/school Evaluation of instruction in related area/basic skills

Figure 2. Potential Data Elements-Employer Follow-up*

Data Category	Potential Data Elements
Employee Work, Knowledge and Skills	Quality of work Quantity of work Job related knowledge Job related technical skills Ability to use tools and equipment on job Basic academic skills
Employee Work Habits, Attitudes and Characteristics	Acceptance of responsibility Punctuality Amount of supervision required Willingness to learn and improve Cooperation with co-workers Cooperation with supervisor/management Compliance with company policies, rules and practices Attendance

Figure 2 (continued)

Data Category	Potential Data Elements
Overall rating of employee	Rating of employee in relation to others in work group

*It should be noted that under VEDS the employer is asked to rate the training of the individual, not the individual who received the training. The assumption is that the employer can judge the quality of training by the performance of the employee. Under the elements proposed above (and used in a majority of present systems) the follow-up personnel have to make a decision as to the extent that the employee performance is attributable to the vocational program.

The above elements are those which were most commonly found in follow-up reports reviewed in the companion document to this guide. Any element actually selected should be justified under one or more of the system's objectives.

Additional data elements - The identification of additional needed data elements should begin with a reexamination of the system's goals and objectives. The goals/objectives section of this guide contained five general goal categories: (1) Compliance/Reporting, (2) Program Evaluation/Improvement, (3) Planning, (4) Research, and (5) Improvement of the follow-up. The elements listed in Figures 1 and 2 were synthesized from current follow-up manuals and reports and tend to emphasize the first three goal categories. Follow-up studies may, however, have one or more objectives related to research. Relationships between student characteristics, school performance or satisfaction may be investigated using student and/or employer follow-up data. Objectives related to assessment and improvement of the follow-up itself may require collection of additional data items.

Each potential data user's original request should be reviewed in relation to identified data elements. In most cases, a given element may serve more than one user. If there are user requests which are not satisfied by identified elements, these may be added to the list. Then, when all of the needed elements have been listed, the total list should be reviewed for possible redundancies. Placing the elements in some order or priority may prove useful if the list is too long and cuts have to be made. If other agencies are also collecting follow-up information (e.g. specialized surveys by schools, the State Department of Education, etc.) from employers or employees, a review of their efforts should be made to identify possible overlapping of requests.

Specify Data Items

As a final step in the process of determining what data are to be collected, each data element should be further broken out into data items or actual pieces of information to be collected. The data elements help provide an organizational scheme for instrument construction, selection, or modification and the data items are the basis for actually writing the questions or phrasing the statements. Several of the elements listed earlier are broken out in Figure 3 to illustrate this process.

Figure 3. Potential Data Items

Category	Data Elements	Data Items
Job Satisfaction	Satisfaction with specific job aspects	Satisfaction with potential for advancement
		Satisfaction with supervision and management
		Satisfaction with co-workers
		Satisfaction with company policies and practices
		Satisfaction with pace of work
		Satisfaction with facilities and equipment on job
		Satisfaction with variety of work tasks

Figure 3 (continued)

Category	Data Elements	Data Items
		Satisfaction with safety conditions on job
		Satisfaction with job security
		Satisfaction with general working conditions
Evaluation of Training Program	Curriculum	Included skills required on job
		Included job related technical knowledge required on job
	Facilities and Equipment	Similarity of school laboratory to job
		Ease of adaptability to facilities and equipment on job
	Instruction	Quality of teaching
		Instructors' knowledge of subject
		Instructors' interest in student
		Currency of instruction
Evaluation of Related School Services	Employment	Career counseling
		Job placement
		Part-time placement while in school
	School and Personal	Financial assistance
		Personal counseling

Figure 3 (continued)

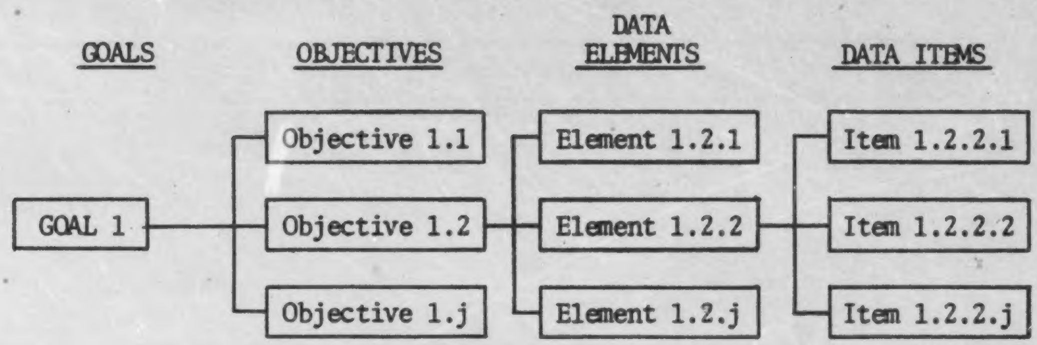
Category	Data Elements	Data Items
		Academic counseling
		Study, library, learning resources
		Recreation program
		Health services

The list of data items which may be developed can be quite extensive, and their delineation may reveal that too much information is being requested in terms of the effects it may have on cost and return rate. Again, the total list should be examined for overlap or redundancy, and an order of priorities of data items may help to eliminate some of the less critical ones.

Summary

The specification of data requirements has been presented as a rather lengthy and tedious process, but it is not so much tedious as systematic when carried out. The steps outlined above are most appropriate for development of a follow-up system from the ground up, but modification of existing systems may also be facilitated by carrying out the same steps from goal setting to specification of data items. Figure 4 depicts the recommended steps in the process.

Figure 4. Steps in Identifying Data Requirements


GOALS
OBJECTIVES
DATA ELEMENTS
DATA ITEMS
GOAL 1
Objective 1.1
Objective 1.2
Objective 1.j
Element 1.2.1
Element 1.2.2
Element 1.2.j
Item 1.2.2.1
Item 1.2.2.2
Item 1.2.2.j

Specify Study Type, Design and Methods

The information necessary to make informed decisions regarding the type and design of the follow-up as well as the methods to be employed is developed through the process described in the preceding sections. This section deals with various options that are possible in terms of the type of follow-up that will be conducted, from whom data will be sought, how those individuals will be selected, and how the data will be gathered. To some extent, the objectives already specified will limit the options available. Thus not all of the options discussed here will be appropriate in every instance.

Determine type of Follow-up

There are four basic types of follow-up studies: one-shot, recurring, cross-sectional, and longitudinal. Additionally, it is possible to have a combination of two or more of these. The type of effort conducted is more often limited by the objectives of the follow-up than are the design of the study or methods to be used. Each type is especially effective in dealing with a particular set of objectives.

One-shot - In the one-shot type of follow-up a single collection of data is planned. Once the data are collected, analyzed, and interpreted, all objectives of the effort have been met and it is phased out. This type of follow-up is especially effective for evaluating a new program or procedure, in determining the effects of an existing program on a special population, or in developing information needed to justify program revision, expansion or deletion. (65)

The major advantages of one-shot efforts result from the fact that the objectives of the study are both limited and very specific. Studies of this nature are generally inexpensive to conduct because large amounts of data are not sought. There is no need to develop systems for identifying respondents since the data files will not be up-dated. Thus data security and storage problems are minimal. It is often possible to process the data manually. The quality of the data is of primary concern. Cost is also a consideration but there is little need to be concerned about the adaptability of the system or the data.

The disadvantages of a one-shot follow-up are also largely a product of its specificity. It is impossible to identify or investigate trends or developing patterns. It is often more difficult to achieve high rates of return with one-shot efforts since little or no rapport is developed between subjects and those seeking information. The data produced only describe conditions as they exist when the data are collected. For this reason it is especially important that the quality of the data obtained be assured. Even though the data will be collected only once, a one-shot follow-up should never be undertaken casually or carelessly. Considerable time and money can be spent in its planning and design, and the data collected should be significant enough to warrant such an effort.

Recurring - The most common among existing follow-up systems, this type collects the same basic information from a different group of individuals at regular intervals, usually from former students each year at some specified length of time after they complete or leave their programs. A recurring follow-up is most often developed to supply information necessary for mandated reporting by State and Federal agencies. While the specific data required may change from year to year, the basic kinds of data remain fairly constant. The extent to which system changes are necessary to meet these data requirement changes depends on the adaptability of the system, but the nature of the system can remain the same.

Recurring follow-up systems have some of the same advantages of the one-shot type. Cost of conducting the follow-up can be relatively low if the objectives are limited mainly to compliance reporting. Planning and designing costs are even more reasonable since they will be spread out over all of the years the system is in operation. Another advantage of the recurring over the one-shot follow-up is in the collection of data describing changes and trends, although a recurring follow-up can only produce descriptive data in this regard. Data storage and security are added considerations but they are not difficult since data files do not have to be updated. There is a problem in determining how long the data files should be stored, and this may have financial, legal, and policy implications. Two additional advantages of the recurring follow-up are that (1) over several years a rapport can be built with the student body and the community which will enhance chances for a high rate of return; and (2) it provides an opportunity for improving the data collection instrument with experience in its use. Major changes should, of course, be kept to a minimum in order to have comparable data from year to year.

One of the disadvantages of a recurring follow-up is in being unable to adapt it very easily to changing data requirement while still maintaining a reasonably efficient and economical system. Efforts to maximize adaptability may lead to seeking unreasonable amounts of data, which in turn often results in low quality data because of low return rates, and thus an inefficient system in terms of cost. The other extreme also occurs. Systems are sometimes developed which are low cost and produce quality data but are rigidly tied to a single set of data requirements. Such a system requires major revisions in order to respond to changing requirements. If changes are required, often the likelihood of year to year comparisons is greatly reduced.

For all practical purposes this is more like a series of annual one-shot efforts rather than a recurring follow-up system.

One additional characteristic of most recurring systems as compared to some one-shot efforts is that manual processing is generally not feasible. If the population or amount of data sought is quite small, a manual system may still be used, but it soon becomes an uneconomical operation. Machine processing is usually necessary for even a reasonable amount of adaptability and this may present financial considerations which in turn affect the scope of the effort.

Cross-sectional - A cross-sectional follow-up gathers data at one point in time from several categories of individuals included in a larger population. Thus an effort to concurrently obtain information from individuals one year after they complete or leave their programs and from another group which had been out three years would be of the cross-sectional type. Several such studies are identified in the companion document to this report, Follow-up Procedures: A National Review. Bibliographic entries 24, 53, 172 and 182 are examples.

The major advantage of a cross-sectional effort is that information is obtained at one point in time which can be useful in describing contrasts or explaining trends. It is the least expensive way of investigating developments or trends in terms of time and money. The use of cross-sectional data to explore time-ordered relationships must be done with caution, especially if respondents are asked to recall previous incidents. Also, it must be assumed that the conditions affecting individuals have remained constant for all categories of individuals followed-up. It is also possible to make cross-sectional type data analyses by comparing information collected during several years of a recurring follow-up.

Cross-sectional follow-ups while saving time and money have disadvantages. For one thing, comparability of the data is often questionable. Since they are collected from different groups, they may be comparable in some respects but not in others. The considerable effort required to obtain accurate addresses or telephone numbers for those persons who have been out of the program longest increases cost. In areas having high mobility, it may be impossible to obtain that information and the quality of the data goes down. A lower response rate may result from the lack of opportunity to build rapport with subjects. This also has the effect of lowering the quality of the data or increasing the cost through special efforts to encourage response.

Longitudinal - A study in which data are collected at different points in time in order to study changes or explore time-ordered associations is longitudinal. Three types of longitudinal studies are commonly recognized: trend, cohort and panel. A panel longitudinal study is one in which the same individuals are followed-up at each data collection point. For purposes of the present discussion the terms panel longitudinal and longitudinal study are used synonymously. The longitudinal study which follows up the same individuals at one, three and five year points after program exit provides developmental data which can only be approximated by the cross-sectional study. The information gathered through such longitudinal surveys are most useful for describing and explaining developmental trends. In some instances it is possible to attribute some or all of the changes or trends to specific causes. Examples of longitudinal efforts are bibliographic entries 23, 68, 86, and 111. Relatively few longitudinal follow-ups of vocational students have been conducted.

Collecting data from the same group at regular intervals has three advantages over a cross-sectional effort. First, findings and conclusions are not based on any assumptions regarding the equivalence of different groups, because only one group is involved. Second, fewer problems are encountered in contacting subjects. Addresses or telephone numbers are up-dated on a regular basis, at least during each data collection effort. This reduces the attrition rate and lowers the possibility of non-response bias. Finally, data collection on a regular schedule builds rapport between the subjects and the follow-up staff. This also has the potential for increasing the rate of return, and thus reducing the likelihood of non-response bias. The longitudinal type of follow-up undoubtedly provides the most valid and reliable data for investigating trends.

The major disadvantages of longitudinal follow-ups are the cost, time, and effort involved. They are expensive because data are collected over a period of time. If a sample is used, the size of the sample must be large enough to allow for accumulated attrition, and maintaining rapport with a large sample over an extended period requires additional effort. Also few results or benefits of a longitudinal effort are realized until after the second data collection has taken place, and this time lag between expenditures and results often makes it difficult to maintain adequate financial and personnel resources. This has probably been the major factor in limiting the number of longitudinal follow-ups that have been conducted. Finally, updating each respondent's file periodically requires linkages which can jeopardize the security of the files.

Combinations - It is possible to combine more than one type of follow-up and carry them out concurrently. Probably the most common combination is a one-shot with a recurring, usually when there is an interest in investigating a specific condition in depth. It has already been noted that an after-the-fact cross-sectional analysis of data is possible when a recurring follow-up gathers comparable data over a period of several years. In addition, a recurring type which collects data at more than one time after program exit makes analysis of the data possible as if the study were of the recurring, cross-sectional, or longitudinal type. These are merely examples of how the adaptability of a system can be increased by adequate planning and combining follow-up types.

Determine Follow-up Design

Two of the major options available when considering the design of the system are to collect data from all members of the population or to use a sample. If a sample is to be used, there are a number of ways the sampling may be done. Final decisions are affected to some extent by the goals and objectives of the study, but the cost, quality and adaptability of the system as well as characteristics of the population are usually the critical factors. Most goals and objectives can be met by collecting data either from the entire population or from an appropriate sample.

Census - This is a follow-up that attempts to collect data from all members of the population, and this design has several advantages. Public relations may be strengthened by allowing all members of the population an opportunity to express themselves, and this is particularly true when the population is small or there are small subgroups within the population. Moreover, if one of the objectives is to provide feedback information to local schools or programs, census data are much more meaningful than data from a sample. If the entire population is small, there may be little difference in cost and effort between seeking data from the entire population and from a representative sample. Finally, there is also the matter of public acceptance. To many laymen data not gathered through a census are suspect, and this may include State legislators as well as citizen groups.

The disadvantages of the census are primarily associated with cost, but often quality as well. Following-up a large population is expensive because of printing, postage, telephoning, travel, recording the responses, and data processing. Manual processing is virtually impossible, which means leasing or purchasing computer equipment or paying someone else to process the data. Quality suffers if there is a low rate of response, and this sometimes happens when resources are inadequate to provide for prompts or additional contact attempts. The result may be an unreasonably high cost per useable return. Finally, a census of a large population virtually rules out interview methods of data collection, and these may be more effective than mail-out questionnaires.

Whatever the advantages or disadvantages, it is true that a majority of existing follow-up systems utilize a census design. The first document of this series, Follow-Up Procedures: A National Review indicates that almost two-thirds of the existing systems are of this design.

Sampling - When less than the total population is to be surveyed, a sampling technique must be employed. In selecting the individuals to be included in the sample, the major concern is that the sample will be representative of the population. That is, the sample must have the same important characteristics as the population.

One important advantage of collecting information from a sample is that costs can often be reduced. However, as pointed out by the Southern Regional Education Board (197) the additional effort and cost of following a sampling procedure precisely must be taken into account. In some instances savings may be realized because manual processing of the data is feasible. It is often possible to seek more data and still obtain a higher response rate by surveying a sample rather than the entire population. This is because additional effort can be expended in instrument development and in encouraging returns. Thus "a high rate of return from a properly drawn random sample would provide infinitely more valid data than a total population survey which received a low rate of response." (31, p. 16). Follow-up surveys of the entire population have often resulted in relatively low rates of return (31).

Three major disadvantages are associated with sampling. First and foremost, unless the sample is properly selected it will not be representative of the population. If the population is small to begin with, a sample will have to include the vast majority of the population in order to be representative. In such a case, it is probably preferable, and may be no more costly to conduct a census. Finally, if one of the objectives of the follow-up is to provide feedback to programs or schools within a State, sampling may not be appropriate. This is because sampling, by its very nature, does not guarantee that an adequate number of subjects from each program or school are included.

Few of the reports reviewed during the course of developing the first document of this series used a sampling technique -- only about twenty-five percent in the case of student follow-ups and ten percent of the employer follow-ups. There are probably two major reasons for this in addition to the disadvantages of sampling cited above. Fear that the quality of the results will not be satisfactory and lack of knowledge about samples and how they are drawn. The following discussion of sample types should provide the general background information necessary to use samples wisely and correctly.

Simple Random Sample - This is a sample in which every individual in the population has an equal and independent chance of being included. Selecting the sample can be done in a number of ways. One is to write the name of every member of the population on a card and shuffle the cards. The required number of names are then drawn. (Sample size will be discussed later). When dealing with large populations a random number table is often used. This is a table mathematically designed to achieve the same results as shuffling but is much easier to use. Each member of the population is assigned a number, then starting anywhere in the table, select those individuals with numbers corresponding to the successive numbers in the table until the required sample size is achieved (240).

A simple random sample would be most appropriate when the population does not contain meaningful sub-groups. This is not to imply that a simple random sample cannot be used if the population does contain sub-groups. However, by using a simple random sample in such an instance the accuracy with which the sample represents the population is almost always reduced. Simple random samples were used for follow-up 31, 62, and 79 in the bibliography.

Stratified - There are two basic types of stratified sampling which have been used in follow-up studies: (1) stratified and (2) proportional stratified. A third type, optimum stratified, may be appropriate but has not been generally used, probably because of its complexity.

If the population is composed of meaningful sub-groups, stratified sampling is appropriate. Meaningful sub-groups may be defined by such descriptors as ethnic/racial categories, school achievement levels, occupational categories, sex and others.

An equal stratified sample contains an equal number of persons randomly selected from each of the sub-groups which are called strata. All sub-groups are thus represented and comparisons between them may be made. For example, if one objective of the follow-up is to compare the job satisfaction of male and female graduates of business programs, an equal stratified sample would be appropriate. To generalize to the total population from which an equal stratified sample was drawn, the responses from each stratum must be weighted by the inverse of the probability of selection within that stratum. For example, if the sample size provides for a probability of selection of 1/5, the responses of that sample should be multiplied by five. Extensive discussion of how this is accomplished is readily available in many books which discuss sampling techniques. The reports included in the bibliography as entries 25 and 127 are examples of the use of equal stratified samples.

Equal stratified sampling is a special type of disproportional stratified sampling. In some cases it may be desirable to determine sample size from some sub-groups on some other basis: for example, a random sample of 100 subjects from any sub-group of more than 600 might be combined with the total number of subjects in any sub-group containing less than 100 to form a sample. At other times, one or more sub-groups may be of particular interest. In that case, planners may elect to "over-sample" from those sub-groups. Bibliographic entry number 30 is an example of this approach to sampling.

When a proportional stratified sample is used, the size of the sample drawn from each stratum is based on the representation of that sub-group in the total population. For example, if the total population was 65 percent female and 35 percent male, 65 percent of the desired sample would be randomly drawn from the female sub-group.

A proportional stratified sampling technique is often more likely to represent accurately the population in terms of the sub-groups of which it is composed. It assures that all meaningful sub-groups are represented, and it assures that they are represented in the sample to the same extent as they are in the population. On the other hand, while it is often possible to make some comparisons among sub-groups with a sample of this kind, such comparisons are not as simple as with equal stratification.

The most important drawbacks of stratified sampling are in the classification of the population into strata. It can be very expensive to do this if lists are not already available. Errors in classifying subjects can also become a problem when the strata are not precisely defined. If the variables or characteristics used to determine strata are not related to follow-up responses, no gain in accuracy through stratification will be accomplished. Without accurate information regarding the composition of the population, it is virtually impossible to use proportional stratified sampling. Proportional stratification by service areas is probably the most common use of this procedure. Examples are found in entries 39 and 127 in the bibliography.

Systematic - This is a sampling technique which resembles a simple random sample, but may not result in a truly random selection. In order to draw a sample using a systematic approach it is necessary to develop a complete list of the population. The desired sample size is divided into the number of individuals in the total population. This quotient represents the increment by which subjects will be selected. If for example a sample of 100 was desired from a population of 555, every fifth individual on the list would be included in the sample. The selection process is begun at a random place in the list and returns to the beginning of the list if the desired sample size is not achieved when the end of the list is reached. The extent to which a systematic sample approximates a simple random sample is determined by the extent to which the list is random. If the list is randomly compiled a good approximation is obtained.

The major advantage in using a systematic sample is the ease with which it can be selected. There is a disadvantage, however, in the likelihood of a biased sample being drawn if the population list is based on any orderly sequence, for example alphabetical. Systematic sampling was used in the follow-ups listed as bibliographic entry numbers 1, 189, and 223.

Cluster - This is the least used of the more common sampling procedures discussed in this document. It is based on the random selection of groups of subjects rather than on individual subjects. For example, a school district might choose to select at random entire classes for follow-up rather than randomly selecting students from all classes throughout the district. There are two basic reasons for using cluster sampling. First, it may be difficult to develop a list of all members of the population, a requirement in each of the previous sampling techniques. Second, if one of the objectives of the follow-up is to compare different institutional practices, it is often impossible to do so with a random selection of individuals. As an example, comparing a placement service which includes a post-placement interview with one that does not, when such a practice would be established on a school-wide basis, would be easier using a sample of randomly selected schools rather than individual students.

Cluster sampling has two advantages when it can be used. It is only necessary to develop a list of those individuals who are included in the selected groups. It also provides useful data about each of the groups selected. This is an advantage if one objective of the follow-up is to provide such information to teachers or administrators. The major disadvantage is that this procedure has a lower probability of resulting in an accurate sample of the population than those previously discussed. While no existing follow-up systems were identified in which a true cluster sample was used, reports 9 and 10 in the bibliography approximate this procedure. A slightly modified cluster sample is the only sampling technique allowed by VEDS in State follow-up reporting. As few as twenty percent of the school districts may be followed-up each year in an annual rotation so that all school districts are followed up every five years. However, the sample should be selected in such a manner that it is roughly representative of the total state population. The purpose is to reduce the cost of follow-up while maintaining adequate representation of the population.

Combination - It is possible, and sometimes desirable, to use a combination of census and sampling in a follow-up. This approach might be taken to reduce costs and still provide useful data to at least a portion of programs or schools cooperating in the follow-up effort. As an example, all graduates of one or more service area programs might be followed-up each year, while a sample could be selected from the remaining program areas. By rotating the census among the service areas, each is provided useful information periodically. This is not a reasonable alternative if a major objective of the effort is to develop a complete data base for annual planning at lower administrative levels. Several follow-up systems have used this approach, i.e. bibliographic entry numbers 39, 223, and 225. A random sample has also been used in conjunction with a census to demonstrate the validity of a random sample for the purpose of modifying follow-up procedures (31).

Determining Sample Size

What constitutes an adequate size sample has been the subject of much controversy. It is difficult to specify in numerical terms the exact relationship between the size of the sample and the size of the population which would be appropriate in every instance. There are factors peculiar to each situation which have to be considered. Mauly (242) points out that no simple answer exists. However, "a sample should be relatively 'large,' not because a large sample is good in itself but rather because it gives randomness a chance to operate" (p. 141).

Major Issues - How large a sample should be depends on a number of factors. Above all, it is necessary that the sample be large enough to be representative of the population. Thus a smaller sample would be required to represent a homogenious population than would be required to represent a population which is highly heterogeneous.

Sample size is also affected by the refinement of the measuring instrument being used as well as what is being measured. Smaller samples can be used when the measuring instrument has been proven to be valid and reliable than when instruments of questionable or unproven quality are employed. For example, the average height of sixth graders could be more accurately determined by using a measuring tape graduated in sixteenths of an inch increments than one graduated in quarter-inch increments. Theoretically, if enough sixth graders were measured with the less precise rule the size of the sample would tend to overcome the lack of precision of the instrument. It stands to reason that there are practical limitations to how much imprecision can be nullified by sample size. A related issue is what is being measured. Students' height can be measured more accurately than can their IQ. Thus a larger sample would be required to determine sixth graders' average IQ than their average height.

Another consideration affecting the size of the sample is the sampling procedure to be used. Generally, it is necessary to use a larger sample if a stratified sampling procedure is used than when a simple random sample is used. This is especially true when one objective of the effort is to make comparisons among the various sub-groups. The key factor here is the size of the sample necessary from each of the sub-groups to insure each is adequately represented. Not only the quality but the adaptability of follow-up data will be compromised if sub-groups are inadequately sampled.

In the final analysis, the decision about sample size is usually made by weighing how much precision is desired or required against the cost of obtaining that precision. Common sense plays a large role in this determination. It is unlikely that some error in estimating the starting pay of program graduates would have as profound an effect on program continuation as would error in estimating the extent to which program graduates are entering a field related to their training. Unreasonable requirements for precision drive up the cost of the follow-up.

Having said that, however, it is necessary to emphasize that precision, quality, and adaptability are all directly related, and to sacrifice one is to sacrifice all three. A second point to be emphasized is that "sample *size* is *much* more important than what percent it is of the population. A ten percent sample of ten is meaningless; a ten percent sample of 100,000 is wasteful." (65, p. 69). This point is underscored by Mauly (242) in stating that the precision of the data is more a function of the size of the sample than of the percentage of the population included in the sample.

Several procedures can be used to determine sample size. An expert on sampling could be employed to compute the size necessary for any desired level of precision. It could be computed on the basis of the cost of contacting and processing information from each individual in any given sample. A review of literature would provide insight into the size of samples which have been used by others in a similar situation. However, probably the most economical and convenient procedure is to refer to one of the several published tables for selecting sample size. Figure 5 illustrates the importance of sample size as opposed to percentage of the population (65, p. 71).

The use of a table has two distinct advantages over reviewing the literature or determining sample size solely on the basis of cost. First, a reasonable estimate of precision is provided by the table. Second, it may provide an appropriate sample without the staff time and cost involved in determining and justifying a sample independently. This is especially true for those agencies not having a sampling expert on the staff or readily available. It should still be remembered that the estimates of precision associated with the

Figure 5. TABLE FOR SELECTING SAMPLE SIZE[1]

If your population is of size

and you want to guarantee* that your sample percent reflects your population percent within

then you should use a sample of size

	±1%	±2%	±3%	±4%	±5%	±6%	±7%	±8%	±9%	±10%
100	99	97	92	86	80	73	67	61	55	49
150	148	142	132	121	108	97	85	76	67	59
200	196	185	169	151	132	115	99	86	75	65
250	244	227	203	177	152	130	110	94	81	70
300	291	267	235	201	169	142	119	101	85	73
350	338	306	264	222	184	152	126	106	89	76
400	385	343	291	241	196	161	132	110	92	78
450	430	379	317	258	208	168	137	113	94	80
500	476	414	341	273	218	174	141	116	96	81
600	565	481	385	301	235	185	148	121	100	83
700	653	542	423	324	249	194	154	124	102	85
800	739	601	458	343	260	201	158	127	104	86
900	823	655	489	361	270	206	161	129	105	87
1000	906	706	517	376	278	211	164	131	106	88
1200	1067	801	565	401	292	219	169	134	108	89
1400	1222	885	606	421	302	225	172	136	110	90
1600	1372	961	641	437	310	229	175	138	111	91
1800	1516	1029	670	451	317	233	177	139	112	92
2000	1656	1092	696	462	323	236	179	140	112	92
2500	1984	1225	748	485	333	242	182	142	114	93
3000	2286	1334	788	501	341	245	184	143	115	94
3500	2566	1425	818	513	347	248	186	144	115	94
4000	2824	1501	843	522	351	251	187	145	116	94
4500	3065	1566	863	530	354	252	188	146	116	95
5000	3289	1623	880	536	357	254	189	146	116	95
6000	3693	1715	906	546	362	256	190	147	117	95
7000	4049	1788	926	553	365	257	191	147	117	95
8000	4365	1847	942	559	367	259	192	148	117	95
9000	4647	1896	954	563	369	260	192	148	118	96
10000	4900	1937	965	567	370	260	193	148	118	96
15000	5856	2070	997	578	375	263	194	149	118	96
20000	6489	2144	1014	583	377	264	195	149	118	96
25000	6939	2191	1024	587	379	264	195	150	119	96
Infinitely large	9604	2401	1067	600	384	267	196	150	119	96

For example, if you have a population of 5,000 people and you want the sample percent to be within 4% of the true population value, you should use a sample size 536.

* odds 19 to 1

[1] Reproduced with permission from Student Accountability Model Operations Handbook (71)

particular sample sizes are still affected by other factors, such as the reliability and validity of the measurement instrument and the rate of return.

Determine Data Collection Methods

To some extent data collection methods are affected by and must be considered simultaneously with the question of whether to use a sample and how large it should be. The objectives of the follow-up and the number of persons to be contacted may impose limitations on which methods can be used while maintaining reasonable cost. A variety of methods and combinations of methods are available. The decision of which method or what combination to use should be made by examining the local situation and requirements in view of the characteristics of each of the options. There are three basic methods which can be used to collect follow-up data: the mail-out questionnaire; telephone interview; and personal interview. In addition, each of these may be supported through the use of two techniques, prompts and incentives, to encourage returns.

Mail-Out Questionnaire - This is the method most commonly used, and while it may be expensive and time-consuming, these costs are relatively small when prorated over a large number of contacts. Since many individuals and agencies have developed and are using questionnaires, there is a considerable amount of information in the literature that can help reduce development costs. Many individuals feel more comfortable with mail-out questionnaires than with other methods of data collection because of their frequency of use. It is a convenient and economical way of collecting information from large numbers of individuals, particularly when the follow-up population is widely dispersed. The use of a questionnaire also guarantees that all subjects are asked the same questions in the same way.

On the other hand, mail-out questionnaires are not uniformly satisfactory and may present many disadvantages. For one thing, they have a history of low to moderate rates of return. There have been questionnaires which produced high return rates, but unless they are carefully constructed with considerable attention to detail in both content and the way they are used, low returns are almost inevitable.

Because of their popularity and the fact that many people feel comfortable with mail-out questionnaires, there is often a feeling that anyone can put one together in a reasonably short time. That much is true, but the reliability of information obtained through the use of amateur questionnaires is doubtful. The professional skill with which such documents are prepared has a major effect on the rate of return, reliability and validity of the data, adaptability, and cost. Questions may be misunderstood, misinterpreted, provoke hostility, or otherwise lead to bad information unless they are organized and expressed with considerable skill. If it is necessary to change the questionnaire on a regular basis to meet changing requirements for data, the economic advantages of this method may be greatly reduced. The use of mail-out questionnaires obviously has attractions or it would not be the predominate method of collecting follow-up data, but it is equally capable of producing good or bad results depending on the care and professional skill that go into its preparation.

Telephone Interview - Follow-up information has been collected by telephone interview, but rather infrequently. The first document in this series notes that it is the method least used for the initial data collection attempt, but increases in popularity with second and third attempts. It has the advantage of a measure of personal contact not possible when a questionnaire is used, which may be one of the reasons for the relatively high rate of response commonly reported when this method is used. Questions can be clarified when misunderstandings arise, although some care must be taken in this regard to avoid leading or suggesting responses. Telephone interviews can be conducted from a central location, and it is sometimes possible to obtain more information or at least more in-depth information through the interviewing technique. This may be especially true when following-up persons with special characteristics such as those who are bilingual, disadvantaged or handicapped.

There are limitations in telephone interviewing as a method of obtaining follow-up information, however. When individuals being followed-up live outside the local area, telephone costs can be prohibitive. The feasibility of telephone interviewing is also reduced if a large number of individuals must be contacted, if for no other reason than the amount of staff time required to complete the interviews. In general, telephone interviews serve the purpose of a follow-up reasonably well when a sample or a small population is being surveyed, or when an extremely limited amount of information is sought from a moderate number of persons.

Planners and system designers should be aware of two additional factors which may affect the results obtained through a telephone interview. Identical questions must be asked of each person interviewed, and asked in the same way. Changes in the way a question is asked or even different inflections in the voice, may cause individuals to respond differently to some items. For this reason it is important that an interview script be developed and used, that questions be anticipated and uniform explanations developed, and that interviewers receive some training before they begin the survey. Secondly, it is possible that individuals will respond more favorably to questions asked in a telephone interview than when those same questions appear on a questionnaire. Although there is some uncertainty about this, it may result from the loss of a feeling of privacy and anonimity on the part of respondents.

Personal Interview - The review of current follow-up practices revealed that personal interviews are a more popular method than telephone interviews only for the first attempt to collect data. As additional data collection attempts are made, the personal interview is used less frequently. It was used exclusively in approximately five percent of the data collection surveys reviewed.

The personal interview provides more personal contact than the other two major methods. As with the telephone interview, questions can be clarified and studies which have used this method have generally reported very high response rates. High response rates may be the result of personal contact. Another possible advantage is that if the interviews of employed persons are conducted at the job site, additional information can be obtained. For example, the employer might be interviewed at the same time or some evaluation of the job site might be made.

On the other hand, the disadvantages of telephone interviewing are also true of personal interviews, but to an even greater extent. The number of persons who can be contacted is extremely limited and can only include those residing in a small area. Results may be favorably biased because of the personal contact involved. Interviewers also may influence respondents through leading or prompting.

Techniques for Increasing Response Rates

A variety of techniques have been used to increase response rates in follow-up surveys, some of them quite successfully. When questionnaires are equally capable of eliciting information, experience shows that any of the four kinds of techniques discussed here can increase the rate of response. It should also be noted that, while these techniques would appear to be useful only with mail-out questionnaires, that is not the case. Many of them can be used just as successfully with interviews, and this has been done in a number of cases.

Prompts - A prompt is any device, technique, or effort which has as its purpose encouraging a response, reminding persons to respond, stimulating interest, getting attention, or publicizing a need to respond. Many types of prompts have been used. Those encountered most frequently include a cover letter explaining the purpose of the study, post-card or telephone reminders, pre-addressed and postage-paid return envelopes, individually signed cover letters, and questionnaires printed on colored paper. Prompts which have been less frequently used include publicity in the local news media, personal salutations on cover letters, captions such as "Now It's Your Turn" or

"Important: Your Attention Requested" printed on questionnaires or envelopes, and the use of colorful wildlife or commemorative stamps on return envelopes. The variety of prompts that can be used is limited only by imagination and budget. The effectiveness of the more commonly used prompts has been documented. How effective others may be which are unique or less frequently used is uncertain, but perhaps the best place to go for ideas is to product or market research. Any prompting technique used in consumer research has probably been tested and found successful.

Incentives - It is sometimes difficult to distinguish between prompts and incentives, but incentives are usually some tangible form of reward for providing information. They are of two basic types, unconditional and conditional. Unconditional incentives are those given to all persons contacted, and are usually included with the questionnaire or with the request for an interview appointment. The intent of unconditional incentives is to gain cooperation by developing a feeling of indebtedness on the part of those who receive them. Examples of unconditional incentives often used are a pencil, a packet of coffee, a keychain, and small amounts of money.

Conditional incentives on the other hand are promised upon return of the questionnaire or completion of the interview. They have an advantage over the unconditional type, since they can only be received upon responding to the request for information. To be effective, however, they must be of greater value, either perceived or actual, than unconditional incentives. Raffle tickets, substantial monetary rewards, a copy of the results, or a newsletter about members of the population have been used as conditional incentives.

Building Rapport - The amount of rapport that exists between the agency conducting the follow-up and the subjects can have an affect on response rate. People are often more willing to respond to requests from agencies or individuals with whom they are familiar. Two procedures have been used to build rapport -- orientation prior to program exit, and communications after program exit.

Orientation before leaving the program usually covers either the purposes of the follow-up effort, the instruments used or both. In most cases it is a brief discussion by the instructor or a member of the follow-up staff just before students leave the program. Such basic points are discussed as what the information will be used for, why it is important to respond, approximately when the information will be collected, and what types of information will be requested.

Communicating with individuals to build rapport without actually attempting to collect information is a less frequently used procedure. The most common example is sending a pre-notice of the survey, i.e. a post-card or letter telling subjects that they will be contacted in the near future. Such novel ideas such as sending birthday or holiday greeting cards have been used with success. As noted earlier, rapport is less of a problem for systems the longer they are in operation. Students seem to expect to be contacted after leaving the program if this has been a standard procedure for some time.

Timing and Number of Attempts

The problems involved in locating individuals who have been out of the program for some time as well as the problems of collecting follow-up information too soon after program exit, have already been discussed. There are other timing considerations which should also be noted. If a questionnaire is used, experience has shown that a better response rate is achieved if they are received on Tuesday, Wednesday or Thursday. Mailings around major holidays such as Thanksgiving, Christmas, or Easter may also increase the possibility that the individuals to whom they are sent will receive them, especially those continuing their education (197). However, some problems can be encountered because of the large amount of mail individuals receive around such holidays. Additionally, questionnaires received on either the 15th or 30th of the month may be ignored since these are times when bills are usually received and paid (99). Requests for information should be timed so that subjects can respond conveniently.

Response rates can always be increased by multiple attempts to collect information, and this is the usual practice in questionnaire surveys. Of the follow-ups reviewed, few made more than three attempts to collect information, however approximately two-thirds of them made at least two attempts. Two or three contact attempts are usually recommended. After the third attempt, the cost of the additional information obtained becomes too high for most purposes, especially if response to the previous attempts was fairly good.

When mail-out questionnaires are used, it is important to plan the timing of second and third mailings. Normally this ranges from two to three weeks, but it depends on whether the individuals being followed-up are widely scattered or reside in the local community, and also the accuracy of address information. The important thing is to allow enough time for delivery and return through the mails and a reasonable period for filling out questionnaire.

The Data Collection Plan

It is important that the entire data collection effort be a planned operation. As an example, it might be scheduled as follows:

Day 1 - Mail pre-notices to all persons being followed-up.
Day 10 - First mailing of questionnaire and cover letter; include keychain, raffle ticket and stamped return envelope.
Day 24 - Mail post-card prompt.
Day 31 - Second mailing of questionnaire with cover letter and written prompt.
Day 45 - Prompt by telephone. Emphasize the need to return the questionnaire in order to be eligible for the raffle.
Day 52 - Cease data collection

This simply illustrates the nature of the planning suggested and is offered only as an example. Regardless of the methods and techniques used, the purpose is to obtain data of the highest quality from the largest number of subjects while maintaining reasonable costs.

The extent to which prompts, incentives and multiple data collections can be used will depend on the availability of staff and financial resources. It is usually better to do a few things well than to try to do too many and do them poorly.

Non-respondent Survey

Non-respondents are those from whom no information is received during the normal planned data collection sequence. A non-respondent check or survey is conducted to determine if non-respondents as a group differ systematically from those members of the population who did respond. If non-respondents differ from respondents the data collected do not accurately represent the population and their use is seriously impaired. Unfortunately, surveys of non-respondents are not often conducted, and in most cases where they have been the results have shown important differences between the characteristics of respondents and non-respondents.

Anytime a response rate of less than 100 percent is obtained, there is a possibility of non-response bias, and this increases as the rate of response declines. It is advisable to make a spot-check for bias whenever the response rate is less than 100 percent but higher than eighty percent. When it is less than eighty percent, a non-respondent survey should be made. Non-respondent surveys can provide useful information in addition to that contained in the questionnaire, e.g. insight into who did not respond and why. This is useful knowledge for improving a follow-up system.

There are three basic ways to make a spot-check for bias. One is to select several important questions from the questionnaire and conduct a telephone interview of a number of non-respondents selected at random. These answers can then be compared to the answers of the respondent group by using appropriate statistical procedures. A more thorough explanation of this process can be found in bibliographic entry 64. A similar procedure which takes a practical, rather than statistical, approach to determining whether differences exist is described in document number 218. However, it should be noted that the latter approach can only be used if the questions in the spot-check have only two possible answers.

A second procedure that has been used frequently is to compare the characteristics of the respondents with the characteristics of the population or of the non-respondent group. In either case the characteristics used for comparisons should be those which might reasonably result in a response bias. These include sex, ethnic/racial background, employment status, in-school achievement, and socio-economic background, although there can be many others. It is usually quite simple to compare respondents to the total population, but the validity of this comparison is based on the assumption that data about the population are available and accurate. If not, or if the data are so general that they fail to identify small but important sub-groups, the existence of a response bias cannot be determined that way. It is safer, although more expensive, to compare the characteristics of the respondents with the non-respondents, and in order to do this data must be collected about the non-respondents. In some cases it may be possible to obtain these data from existing files, e.g. school records. Usually, however, it is necessary to conduct a short survey of non-respondents.

A third procedure is to compare the responses of early respondents with those of late respondents. The underlying assumption is that late respondents' answers will more closely resemble the answers of non-respondents. While this may be true in specific instances it is a questionable assumption.

Regardless of which of these procedures is used to spot-check for response bias, if differences are found the data collected can not be assumed to accurately represent the population. If the data are used, this fact should be made quite clear when interpreting and reporting results.

Should a response rate of less than eighty percent be achieved, the spot-check procedures previously described are not adequate. In such an instance it is advisable to conduct a non-respondent survey. This requires that decisions such as whether to conduct a census or sample survey of non-respondents, what data collection methods to use, and whether the original or a shortened version of the questionnaire should be used must be made. The non-respondent survey is conducted according to the data collection plan that results from those decisions. The data are compared to those obtained from original respondents and a decision made about the extent to which bias exists.

Develop Instrumentation

Instrumentation for the follow-up may take the form of a mail-out questionnaire, a telephone interview guide, an in-person interview script or some combination of these approaches. The extent to which the system achieves its goals and objectives is highly dependent on the adequacy of the instrumentation used, its length, the way questions are phrased, and the ease of recording responses. With decisions made as to what information is to be collected and how, instrument development becomes primarily a process of item construction and determination of layout and format. Since the vast majority of follow-up efforts do use mail-out questionnaires as the primary data collection method, this guide will place emphasis on questionnaire development. Many of the principles of questionnaire design, however, also apply to telephone and personal interview scripts.

Review Available Instruments

Although the title of this section may imply construction of an instrument from the ground up, the process may be more accurately described as "assembling" than construction. Instrumentation for the follow-up of vocational students and/or their employers has been developed in numerous previous studies and offers a wide range of content, styles, and formats. The companion to this guide describes 54 student and 19 employer follow-up instruments, many of them the result of considerable time and thought invested in item construction, instrument format and layout. It is doubtful if any one of them can be used intact by another agency, but a careful examination of available instruments should be a first step in the development process.

Reviewed instruments included simple postcards, self addressed instrument/envelope combinations, elaborate multiple page instruments with professional graphics, a telephone interview script and others. Some were directly machine readable (optical scan), some could be keypunched directly without extensive coding and some required extensive interpretation by system staff prior to coding. Existing instruments can best be reviewed in a systematic way through the following steps:

1. Request instruments from as many follow-up systems/studies as feasible which appear to be similar in scope and characteristics to the system being developed. Many of the instruments are available in materials in the ERIC system but some will need to be requested from the authors or the agencies using them. Some instruments are copyrighted, but it is not advisable at this early stage in the review to request permission to use all or part of a copyrighted instrument. The companion document, Follow-up Procedures: A National Review, will be helpful in locating instruments currently in use.
2. Develop either a large wall chart or loose leaf notebook for assembling potential items. If a wall chart format is used, data items which were previously derived from the system goals and objectives should be grouped by data element and their corresponding data items. As instruments are reviewed, promising items can be transferred to the chart or notebook. These may not be in the desired format, but that can be taken care of later.
3. During the review process, ideas for overall instrument design, graphics and organization should be noted. Instruments ranging from simple typewritten mimeographed sheets to cartoon illustrated professionally printed documents are available.

Prepare Actual Questions and Items

Having completed the review of instruments and collection of sample items and layout format ideas, the actual process of instrument construction can begin. This consists of writing the first draft of items and questions to be included. In some cases, the review of instruments may not have yielded samples or ideas and these must be developed independently. In other cases, identified items may be modified or incorporated as is. Common courtesy, not to mention copyright laws, dictates that in the actual use of intact items or sections of instruments permission should be obtained from the originating author or agency.

There are basic rules of instrument construction and item design which apply to follow-up instrumentation. Many of these principles are described in basic texts on educational measurement. The following were suggested by Gold (65).

- Design the instrument to require the minimum possible time to complete.
- Use as few words as possible in asking the questions.
- Use familiar words, don't abbreviate, avoid long expressions.
- Use two simple questions rather than one complex one.
- Avoid hints as to desirable or expected answers.
- Phrase questions to avoid academically or socially acceptable responses.
- Place easiest to answer questions near the beginning.
- Sequence questions to conform with respondent's way of thinking.
- Plan method of tabulating results during questionnaire preparation.
- Consider using double postcard for brief questionnaire.
- Observe parallelism and exclusiveness in multiple-choice questions.
- Make directions brief but complete and set off with distinctive lettering.
- Don't ask a question unless it clearly relates to the purpose of the study.
- Give prime consideration in designing the questionnaire to motivating its return, secondary consideration to data processing requirements.

- If deemed necessary, assure respondent that names will not be used in any published reports; however, most researchers agree that anonymity is not critical in response rates and it is advisable to be able to make a second contact with non-respondents, thus requiring some kind of identification.
- Use different color questionnaires for groups you want to study separately (p. 28).

Typical questionnaire items consist of a stem and some form of response options including completely open response, multiple choice, alternative categories, yes-no and Likert-type scales of forced-choice. As items are written, several overriding principles should be kept in mind. The first is that above all else the respondent must be able to understand what is being asked. Teachers who have attempted to defend some of their "best" discriminating test items to a grade conscious class have some feeling as to the importance of the principle of clarity.

Second, even if an item reliably collects the correct data, the data must be in a form amenable to the planned analysis or the item is questionable. Therefore, the question of how the data will be analyzed must be posed for each item or group of items. For example, if an item is developed to collect categorical salary data (the respondent is asked to check the range within which his/her salary falls) average salaries cannot be calculated. In many cases, the frequency or percent of respondents falling within prescribed categories is the desired information. It should be kept in mind, however, that if actual salary were collected, several analysis procedures may be employed including categorization. Increased flexibility in analysis can be achieved by designing items to collect data at the highest useful level. Commonly accepted levels of data are nominal (categorical), ordinal (rankings), interval (score data with an arbitrary zero and equal intervals) and ratio (an absolute zero with equal intervals).

Third, economy of respondent time and instrument space should be an ever-present consideration. In many cases, a single stem may serve several data items. As an example, an item from the Minnesota Post Secondary Follow-up instrument (170) requests the respondent's evaluation of related school services:

How would you rate the quality of the following services as provided by the area vocational technical institute? If you did not take advantage of the service, or if the service was not available, check "does not apply" (Please check only one square for each item.)

	Excel-lent	Good	Poor	Does not apply
1. Job Placement	☐	☐	☐	☐
2. Counseling with personal problems.....	☐	☐	☐	☐
3. Help in making career decisions	☐	☐	☐	☐
4. Help in securing part time employment	☐	☐	☐	☐
5. Help in obtaining financial assistance..	☐	☐	☐	☐

	Excel-lent	Good	Poor	Does not apply
6. Help in securing housing...	☐	☐	☐	☐
7. Youth Organizations........	☐	☐	☐	☐
8. Recreation Programs........	☐	☐	☐	☐
9. Study, library, and other learning resource facilities	☐	☐	☐	☐
10. Health Services............	☐	☐	☐	☐

Design Instrument Format

Once actual items have been written, the layout of the overall instrument may be developed. Three considerations are: logical order, respondent classification, and instrument appearance. Logical order indicates that one should ascertain employment status before asking how much the respondent makes or how satisfied she/he is with present employment. A general principle of test development is that an instrument should progress from the easiest to the most difficult items. This is often not possible in follow-up instrumentation. Logical order should be from the point of view of the respondent, not the follow-up goals or data analysis plan.

Second, consideration of who should answer a given item or group of items will often suggest or dictate organization. Many "Not Applicable" responses can be avoided, the respondent can be saved a lot of time, and the probability of response increased by judicious item placement. If there are several items which pertain only to presently unemployed graduates, those items should be grouped and presently employed graduates can be guided around them by the design of the instrument. Care should be exercised in making such decisions, however. Comparisons between various sub-groups within the follow-up population may not be possible if arbitrary decisions are made that certain groups' answers would not be as valuable as others. Program "drop-outs" or leavers is an example of an often omitted group that could provide useful evaluative information.

Thirdly, instrument appearance is important. The instrument should not look crowded or "busy." Directions should be set off by using a different type style or size or by enclosing them in a box, brackets, or shaded area. Consideration should be given to having the instrument typeset and professionally printed rather than simply typed with standard pica or elite type. Several researchers have found that colored paper results in a higher return rate. While consideration of ease of coding is important, it is more important that the questions and directions are easily understood.

Select Appropriate and Alternative Analysis Methods

Once the basic instrument is developed, it should be reviewed in terms of data analysis strategies. While data level was one of the considerations during item development, actual analyses should now be specified to make sure that the items will in fact answer the questions posed. Those items which are specifically designed to supply reporting information in terms of frequencies or percentages will not generally present analysis problems. If a purpose of the follow-up however, is to determine relationships or differences between subgroups of respondents, attention must be given to all items which contribute data to any particular analysis. Alternative analysis strategies should be considered in the event that response rates or other problems make the originally planned analysis inadvisable.

Typically, follow-up reports have used only frequencies, percentages and, in some cases, means to summarize findings. If system goals and objectives have been restricted to descriptive reporting, such analyses are generally appropriate. Unfortunately, however, often there has been little interpretation of even these analyses, leaving the burden of interpreting the findings to the various readers. Vocational educators may be under-utilizing the potential of student and employer follow-up through neglect of careful interpretation of findings.

A follow-up can not only reveal strengths and weaknesses but also explore potential reasons why they exist. This is seldom done, as indicated by the very small number of research-type objectives found during the review. Relationships may be examined through cross-tabulation of variables or in some cases correlational techniques. Questions such as the following can be addressed:

> Is there a relationship between students' evaluation of training programs and their employment status?
>
> Is job satisfaction related to the extent to which students are employed in occupations related to their training program?
>
> Is length of time in the training program related to salary or employers' ratings of worker satisfactoriness?

Although such questions can be asked "post-hoc" or after the follow-up is conducted and the reports written, they may often help in the interpretation of the study findings. The best guarantee that the data will permit analyses such as these is through proper instrument and analysis design.

Prepare Additional Documents

A number of documents are required in addition to the actual student or employer instruments, including cover letters, reminder letters or cards, and pre-notices. They are primarily "prompts" intended to encourage the former student or the employer to respond. It has been found that return rates are higher if the cover letter is signed by the teacher, counselor or principal at the local school level than by someone unknown to the subject. Non-respondents have often stated that the main reason for not responding was failure to see the value or necessity of the follow-up. For this reason it is important that pre-notices or cover letters state clearly and concisely the reasons for the follow-up and why a response is important. All communications with subjects should be professional in appearance but also personal to the extent possible. Communications with employers should be concise and require a minimum of employer or supervisor time.

The Cover Letter - Response rate may be more dependent upon the cover letter than on the questionnaire itself. A good cover letter should have several characteristics. The letter should: (1) clearly state the reasons for the study, (2) stress the importance of a timely response, (3) be straightforward and not make grandiose promises or claims, (4) ideally carry the original signature of someone known to the individual, (5) be as short as possible and (6) be printed rather than mimeographed. The cover letter is actually a document of persuasion. It should encourage a timely response to the questionnaire but should not be too strongly worded. A "hard-sell" will probably be rejected by many potential respondents.

On the second mailing, the original cover letter may be used along with an additional memo or a new cover letter may be developed. This second contact should mention the first mailing and re-emphasize the importance of a response. This letter or memo should also allow for the possibility that the student or employer may already have provided the requested information.

Pre-notice - A few studies have used some form of pre-notification that in a few days the student or employer will receive a follow-up questionnaire. Such a pre-notice can impress subjects both with the importance of the study and of responding promptly. There is little evidence to indicate that the additional cost involved in this procedure is justifiable. However, it may be if a small sample or population is being surveyed.

Reminders - In addition to or in lieu of a complete second or third mailing, some form of reminder may be used, including reminder cards, letters or telephone calls. Such attempts should assume the tone that the former student or employer had intended to return the questionnaire but had forgotten to do so. It should reaffirm the importance of the study and the individual's contribution to that study. In the case of a telephone reminder, a standard script should be used. The purpose of a telephone prompt is to encourage response, not to collect data.

Evaluate and Refine Instruments

Since data derived from student and employer follow-ups are used to make important decisions in vocational education, the quality of such data is critical and has been stressed throughout this guide. Data quality is related to and dependent on many factors, of which instrument reliability and validity are paramount. Validity is the extent to which data accurately reflect program outcomes, or more specifically the extent to which the follow-up instrument accurately measures what it is supposed to measure. Reliability is the consistency with which the instrument measures whatever it measures. A reliable instrument should provide the same answers when repeatedly given to the same people if their conditions have remained constant. For example, if a student reports different degrees of job relatedness to training on two occasions when in fact he or she has not changed jobs, one may begin to wonder whether or not the question was really understood.

Classical test theory and instrument design references provide methodological and procedural guidelines for assessing instrument reliability. Due to the unique nature of follow-up data and instrumentation, this guide does not advocate traditional test-retest or internal consistency reliability measures. The procedures advocated below stresses the maximization rather than just assessment of reliability and validity.

Factors Which Affect Reliability and Validity - When a student or employer responds to a follow-up item, the response may be affected by a number of factors. Using a traditional achievement test as an example, the score a student receives is made up of two components -- the student's true ability and errors of measurement. These errors of measurement may be classified under two types -- constant or "biasing" errors, and random errors. Any aspects of the items which systematically bias the response detract from validity while both constant and random errors detract from reliability. The designer or operator of a follow-up system must strive to eliminate those features of the instruments and procedures which lead to both types of errors.

Obviously, if a student cannot read the questions or understand the directions, quality data will not be obtained. Generally the situation is not so clear-cut however, and is more nearly one of misunderstanding some directions and/or some items or even some words or phrases. It is doubtful that traditional reading level checks are of much use since they do not identify trouble spots for possible revision. For example, if an item simply asks for the student's present salary, answers will probably include hourly rate, weekly income or even annual earnings. Some will be before and some after deductions, some will include overtime, some will not, and so on. Some students who realize that a number of alternatives are possible may be frustrated by the question and not answer it at all or add a note of clarification. Perhaps this is an extreme example but many such items were found in reviewing follow-up instruments. Other problems which may reduce reliability and/or validity are:

- Use of words or technical terms not in the respondent's vocabulary
- Failure to allow for language problems of bilingual populations
- Questions which may be perceived as threatening or too revealing
- Ambiguous questions
- Questions with categorical response options which overlap or are not exhaustive
- Questions which lead the respondent
- Questions which have obviously "socially preferred" responses
- Use of jargon in questions or instructions
- Questionnaires which are so long as to promote careless responding in the latter sections
- Lengthy or complex directions
- Failure to group items logically
- Asking for too much information with one item

- "Double-barreled questions" (these can usually be spotted because they contain the conjunction "and")
- Negative items or double negative items
- Use of "value-loaded" terms when not necessary

Other factors such as response rate and sampling affect data quality also, but the actual instrument is of critical importance. A number of procedures may be employed to maximize the quality of the instrument and thus of the data derived.

Review by Content and/or Instrument Design Specialist - Some of the persons who participated in the goals/objectives and data element definition may be asked to review the instrument in terms of whether or not it adequately addresses the objectives of the follow-up. The extent to which the included items appear to measure what needs to be measured as well as coverage of the objectives should be the primary concerns of the reviewers. Also, review by one or more instrument design specialists may reveal specific shortcomings or design flaws that can be remedied prior to pilot testing.

Pilot Test - Both a pilot test and a pilot study will probably improve the instrument considerably. It is doubtful, however, unless the instrument is to be used with large populations or repeatedly over a period of time that the time and expense of conducting both procedures is justified. The pilot test is less demanding in terms of both time and participants and should be considered a minimum developmental requirement. After review by specialists, the draft instrument should be administered to a small group of twenty or more. The participants in the pilot test should be as nearly like the target population as possible but do not need to be sampled from or proportionally representative of that population. Current students who represent the broadest possible spectrum of abilities, and of cultural and economic backgrounds may be used. The instrument may be administered and then discussed in a group setting, or individuals may respond and then be interviewed. Pilot-test participants should be asked to respond to the instrument as though they had already left the program and to mark anything which they find difficult. Either the group discussion which follows or the individual interviews should provide valuable information for revision of the draft instrument.

A somewhat different approach to the pilot test which has sometimes been used is to mail the draft questionnaire to a small sample of the target population. As soon as a response is received, the respondent is asked to answer questions about the questionnaire. The questions are designed to obtain the same kind of critique that is obtained through the procedure described above.

Pilot Study - A pilot study involves actual use of the follow-up instrument with a representative sample of the target population. The main difference between a pilot study and the actual study is one of size. A pilot study should as nearly as possible replicate the procedures to be used in the actual study. Some researchers will use alternate forms of certain questions or use alternate instruments with sub-samples in a pilot study in order to make judgement about different formats. A pilot study enables one to try out system procedures and instrumentation but does not typically provide the basic instrument improvement data that the simpler pilot test procedure does.

Traditional Reliability Tests - If a follow-up instrument is likely to be used over a period of time and with large samples, a modified test-retest type of reliability assessment may be desirable. One example of such an assessment is described by Pucel and Luftig (171). Since overall instrument reliability is relatively uninformative and may actually be misleading, the reliability of individual items or clusters of items should be checked. Traditional correlational measures are probably not suitable and other methods such as chi square analysis may not be sensitive enough to provide needed information.

In summary, although procedures exist for formal assessment of reliability, the unique nature of follow-up instrumentation indicates that careful review, field testing and revision seem to be most appropriate for instrument improvement.

Eliminate Sterotyping and Bias in Communications

All communications, instruments and reports of the follow-up system should be developed ad reviewed to eliminate age, ethnic and sex stereotyping. There is a history of language usage and convention which runs counter to present guidelines and which makes it difficult to develop non-stereotypic materials without organized and deliberate effort. Internal guidelines and checksheets should be used to monitor practices in this area but an external review of all materials by a person with expertise in the area is also recommended.

There is still some debate on how to achieve fairness in communication but a number of recent publications should be helpful. Among these are:

- Job Title Revisions to Eliminate Sex and Age Referent Language for the Dictionary of Occupational Titles (U.S. Department of Labor, 1975)
- Guidelines for Sex-Fair Vocational Education Materials (U.S. Office of Education, Bureau of Occupational and Adult Education, 1978)
- Guidelines to Ensure Sex Fairness in Education Division Communications (Women on Words and Images, Inc., for the National Advisory Council on Women's Educational Programs, 1978)

Several general guidelines seem to be well accepted and may serve as an internal guide as materials are being prepared.

- Use of a disclaimer to justify consistant use of male referents is not considered to be sex-free communication.
- Use language that encompases both sexes, interchange order and avoid stereotypic association of one sex with any given occupation.
- Use approved neutral occupational titles.
- When names are used as examples in questionnaires, reports or other materials, use common names from various ethnic groups.

- When values, lifestyles, socioeconomic status or ethnicity are indicated, depict a variety, not just those of the writer or predominant group in the area.

Staff development in the area of fair communications may be necessary. The guidelines by Women on Words and Images, Inc. are comprehensive and are an example of materials which may be used in staff development. No comparable materials for dealing with age and ethnic fair communication were located.

OPERATING, DOCUMENTING AND EVALUATING THE SYSTEM

Collect and Analyze Data

Prepare for Data Collection

Prior to the actual start-up of the data collection cycle, an overall record keeping/data management system should be developed. Such a system is necessary to keep accurate records of those who have responded, when responses were received, and when succeeding contact attempts were made. Future analysis of response trends or differences depends on accurate documentation of the data, as do overall accountability and evaluation of the follow-up. Oversights or duplication in mailing questionnaires or in coding reduce the quality of the data, add cost, and damage public relations. Data security during this process must, of course, be maintained for both legal and ethical reasons.

An overall data/records management system ordinarily has three main sub-systems: (1) record keeping, (2) data coding and documentation, and (3) data storage.

Design record keeping system - The record keeping system should provide documentation of attempted contacts, provide a convenient and accurate way of triggering additional contact attempts according to a pre-determined data collection plan, and should record the identity of respondents and time of response. The system should be capable of providing current information during the follow-up on total returns and on the response status of particular former students or their employers. In the case of employer follow-ups which are designed to secure the former student's permission before contacting the employer, the record system should trigger the employer contact attempt when permission is received. Since most follow-up studies guarantee that data will not be identifiable with the particular student or employer, the record keeping system should use numeric codes keyed to name lists which are kept separately under proper security. As few as possible of the staff should have access to the coding system and name lists.

In a continuous-flow follow-up in which former students are contacted throughout the year at a predetermined time after leaving the program, the record system may be automated. An annual follow-up can also be automated, but it may be more feasible to use a series of manual recording forms.

Design coding and documentation procedures - The actual design of the follow-up instrumentation dictates to some extent how responses must be processed. Instruments may range from optical scan forms for direct input to data storage and processing to forms which require extensive manual coding and/or interpretation. Instruments have been used which are designed for keypunching directly from the instrument and a number have been developed which require only a minimum of interpretation and coding prior to processing. Some systems have been designed in such a way that coding and documentation tasks can be performed by clerical staff with a minimum of training.

Follow-up systems which do not use machine processing will generally use data coding sheets specifically designed to facilitate manual data processing. Whatever system is developed would have two design goals: maximum efficiency and accuracy. Efforts to achieve both of these goals may be appreciated when it is realized that a follow-up instrument may contain as many as fifty or more separate items of information, each of which may be multiplied by thousands of returns.

While efficiency (cost) and accuracy (quality) of the coding processes are primary concerns, a third consideration is flexibility. The way data are coded can limit the kinds of analyses that are possible. As a general rule, items of information should be coded numerically rather than alphabetically. Names of schools, cities, programs and other similar information can be converted into numeric codes. These are often pre-printed on the instrument itself, but in any case should become part of the system's documentation in a separate record for data storage and retrieval.

Follow-up systems which use machine processing and analysis of data may or may not possess the expertise within their own staff to develop the actual system components. If external personnel are to be used, they should be involved in coding and documentation decisions as early as the finalization of instruments. Early technology in data processing, on which almost all existing follow-up systems are based, have required the use of specialized programs and routines developed for each individual study. More recent technology has made possible the use of highly flexible programming which allows the user to obtain large numbers of analyses without specialized programming other than for unique functions such as editing and merging of files.

If data are coded so that each piece of information from each respondent is identifiable, most analyses are relatively simple. If a code is used, for example, which contains a unique number for each respondent, the respondent's zip code, school, and training program, it is then possible to generate summary data by geographic area, for schools and for programs. It is also possible to examine other desired combinations or subsections of the data. A statewide system may then have the capability of providing summary data on any program across the total State, on that same program within geographic areas of interest, or even on each such program within each school in the State. A local system which gathers data on all its programs can report information on each program or across programs.

Complete data processing manuals have been published for several systems (see for example Reference 244), which may be adaptable to other systems. As a general rule, however, some specialized coding and/or analysis procedures will probably be needed in any new follow-up system. Again, any system which is developed should guarantee the security and accuracy of all data as well as permit present and future identification of any individual data item.

Plan for data storage - This part of the operation may not at first appear to be much of a problem, but questions of security, redundant storage and the length of time data are to be maintained must be considered. Anyone who has had a master tape "dumped" or erased appreciates the necessity of either having a back-up file or the ability to re-create the lost file at a reasonable cost. Completed instruments should at least be maintained until accuracy of coding and documentation procedures are tested. As a rule nothing should be destroyed that cannot be located in another place or cannot be re-created. The possibilities of fire, theft, vandalism or loss justify the need for redundant data storage. In manual systems, a carbon can be used to create a second copy with little additional effort or cost. Machine processing permits rapid copying of cards, tape, or disk files to a back-up file. Duplicate data sets should, of course, be stored at separate locations. Machine processing such as merging files, correcting entries or adding data always presents the possibility of destroying data through a programming error. For this reason, such processing should be made on an operating file with the master or back-up file kept in reserve.

Prepare and print forms - Basic operational forms such as instruments, cover letters, post card prompts and others are discussed in a previous section of this guide. These, as well as internal data recording forms, record-keeping forms and others should be developed and printed prior to the actual start of the data collection cycle. All external communications should be carefully edited and proofs of those which are to be printed should be carefully examined prior to actual quantity printing.

Plan and conduct training and orientation - As Gold and Morris (64) point out, researchers consistently find that preparation of students while still in school provides significant increases in terms of response rates, completeness and accuracy of responses. Similar efforts with faculty and staff as well as parents, civic groups, employers and labor organizations may also help, although research is lacking as to how such preparation can be accomplished and still remain cost-effective.

All faculty or staff working with the students who will be followed-up should be informed about the system. A positive attitude on the part of teachers and administrators can contribute significantly to positive student attitudes, so any investment in faculty orientation and materials is well worth the effort. It also helps to alleviate faculty concerns that the follow-up is primarily an evaluation of their performance. Orientations should include the purposes of the system, exactly what data are to be collected and how data are to be summarized and used. The positive potential of follow-up data for demonstrating program success as well as for program improvement should be emphasized. When faculty will be conducting the student orientation they should be adequately prepared for the task and be supplied with sample forms, orientation booklet, visuals or other materials which will assist them.

Students should be told about the follow-up while they are still in the program; it is difficult if not impossible after they have left school. They should have an opportunity to ask questions, discuss the benefits of follow-up both to themselves and to future students and even become familiar with the actual questionnaire, interview script or other methods to be used. Results of previous follow-up studies can be shared with students still in school to demonstrate how the collective data rather than individual responses are reported and used by the school or State. Results of employer surveys are also useful, since they are often positive and encouraging to future program completers. An orientation of this kind will tend to assure students of the authenticity of the actual follow-up contact when they receive it.

When the follow-up system uses enrollment data obtained directly from the student while in school, orientation to the follow-up may be conducted at that time. A short review just prior to program termination should then be added to serve as a reminder and to reinforce the cooperative attitude previously encouraged.

Understanding and support for follow-up efforts can be increased by working with groups external to the school system. Such groups include civic organizations, employee and labor organizations and parent groups. A slide-tape presentation or other printed or media materials may prove useful. Again, an attractive hand-out brochure could be made available at such presentations. Public service spot announcements or presentation time on radio or television is made available at no cost to non-profit organizations in many communities. Such mass media approaches may be well worth the time and effort required in terms of their potential effect on response rates and data accuracy and reliability.

Collect Data

The initial phase of data collection is to obtain information necessary in order to contact the former students. As pointed out in the companion document of this set, that information is usually gathered before students leave the program. It may not be possible, but it is certainly much easier to obtain accurate information at that time. Sometimes it is possible to collect such data during the follow-up orientation, if not during the enrollment process. If it is simply not possible to collect the contact information before students leave the program, it may be possible to do so from school files, although to do it that way is generally laborious and time consuming. It should also be kept in mind that the development of accurate contact information becomes increasingly difficult as the time between program exit and follow-up increases. If a sampling procedure rather than a census survey is used, it is from the total list that the sample is drawn according to the procedures outlined previously.

The most efficient way to organize any data collection operation is to build into it at least two on-going activities by the staff. These have been mentioned before but they are important enough to reemphasize. One is the recording of information which indicates who has responded and when. This is essential. The other is data coding or recording. Unless the number of former students being surveyed is very small, coding or recording of the data is a major task. It is time consuming and it can also be quite boring, especially if postponed until all data are collected. In order to keep errors at a minimum and make the best use of staff time it is usually a good idea to plan the coding in between other activities as data are being collected.

After the data collection sequence is completed, the response rate should be evaluated. When a mail-out questionnaire is used, the generally accepted procedure for computing response rate is to subtract the number of questionnaires returned as undeliverable, for any reason, from the total number of individuals with whom contact was attempted and divide the resulting sub-total into the number of usable responses received. In computing the response rate associated with the use of an interview procedure a similar procedure is used. The number of individuals who could not be located after repeated attempts is subtracted from the total number of individuals with whom an attempt was made to set up an interview and the resulting sub-total is divided into the number of individuals with whom interviews were actually conducted. In either case, the answer obtained, expressed as a percentage is the response rate of the data collection effort.

It is often useful to monitor the response rate during the data collection sequence. For example, by knowing the response rate at the end of each major phase, it may be possible to predict whether an extensive non-respondent survey or merely a spot-check for bias will be required. Of course, the actual decision must be based on final results and within the guidelines and plans developed when the system was designed.

Analyze Data

Edit and validate data - Before analyzing the data, it is necessary that they be edited and validated. Whether manual or machine processing is used, the procedure is basically the same. First the data values as coded or recorded should be spot-checked against answers indicated on the questionnaire or interview form. In the case of manual processing this is done visually. When data are keypunched on cards, they can be checked by using a verifying machine. When optical scanning equipment is used, data records can be listed and visually spot-checked.

The second step is to compare data values to specified legal value ranges that have been established for each data item. The intent of this process is not to establish whether the item is accurately coded or recorded but to insure that appropriate codes have been used. For example, a data item indicating the sex of the respondent would most likely be limited to three possibilities, male, female, or omitted. If numeric values of 1, 2, and 3 were assigned to those possible answers, that item would be edited to ensure that no zeros or values greater than three are included as codes for the data item, sex. It should be apparent that editing of this nature will not identify coding or recording errors such as a male being coded as a female.

A third possible step is sometimes feasible. Summary information can be compared against known characteristics of the respondent group. If, for instance, it was known that the respondent group included exactly 200 females, the data item sex could be summarized to determine if 200 respondents were coded as females. Again, however, the fact that the numbers are the same is not a complete guarantee against coding or recording errors.

Develop data files - Before the data file can actually be developed, two preliminary steps should be accomplished. A data file format should be planned. This format describes where data items will be located within the data file. Factors such as cost, efficiency, access, and system compatability must be considered. If expertise and experience in developing data files are not available among staff members, consultation with outside experts may be helpful. This is especially true if the data file being developed is large, complex or will be up-dated at a later time.

If there are data items which should be recoded prior to analysis, it may be advantageous to do the recoding as the data file is developed. For example, the number five (5) may represent a highly favorable response to some items but represent a highly unfavorable response to other items. It may facilitate the analysis of the data to recode such items so that all favorable responses are coded in the same direction.

One other factor that should be considered when coding the data is how missing data will be handled. Generally, missing data are assigned some code. However, there is a temptation to use a blank to indicate missing data. This may present problems during the analysis of the data if machine processing is used. Some computer programs interpret a blank as zero, while in some cases zero and a blank may be a different answer. Also, if the instrument includes response options such as "do not wish to respond" or "does not apply," these are not the same as missing data and should not be coded or interpreted as such.

In some cases, it may be necessary to merge two or more data files to develop the master file. This would occur when in-school or employer data are to be merged with the follow-up data from former students. When data files are merged, the resulting master file should be edited to insure that information has not been deleted, to identify any errors that may have occurred in the transfer or recoding of data, and to ascertain that the file follows the planned data format. Finally, a duplicate of the master file should be made. As noted earlier, such a procedure can save a great deal of time, money and effort if the original is lost or damaged.

Conduct analyses - Although the general format of intended reports was considered during development of the follow-up instrument, a detailed outline for each report should be developed prior to analyzing the data. Each report should be outlined in terms of the specific data and analysis procedures which are available and necessary. These outlines indicate data needed and analyses to be made in order to meet the objectives of each report. It may be that additional or alternative analyses will be identified during the process. Major factors to be considered are the purpose of the report, who will use it, and the type of information to be included.

Data can be analyzed essentially in three different ways: (1) to describe or summarize, (2) to investigate or define relationships, or (3) to investigate or define differences. The nature of the question to be answered determines the kind of analysis to be made. The possibility of answering a question in a particular way depends on the kind of data available. This second point was discussed in the section on instrument development. If something has been overlooked or a mistake made when the instrument was being developed, it is too late to do anything about that after the data are collected. It is possible, on the other hand, to satisfy additional requests for information or to conduct additional analyses after the instrument has been developed if care has been used in the way data are requested.

Analytical questions about the nature or characteristics of a particular group may be answered by using summary statistics. For example, "How many graduates are employed?" could be answered in several ways, some more informative than others. The verbal answers, "Quite a few" or "A majority are employed" provide little useful information. Likewise, the answer "642 are employed" is not very informative without knowing what this represents out of the total group. If the answer is "82 percent are employed" the employment rate is known, not merely a quantity unrelated to anything else. Statistics most frequently used to describe a group in terms of its dominant characteristics are:

- the mean (average)
- the median (the point that divides the population or group in half)
- the mode (the most frequent answer)
- simple counts, sums or percentages
- range

The objective in using these statistics is to provide the most information in the least space and do it without distorting the truth.

Questions about the relationships among characteristics or events can also be answered in several ways. The question, "What is the relationship between program completion and full-time employment?"

could be answered by comparing the full-time employment rate of program completers with non-completers, or by using a statistic that measures strength of association. An example of the first is "75 percent of the program completers are employed full-time, while only 50 percent of the non-completers are employed full-time." This answer describes the employment rate of two different groups, program completers and non-completers, and implies a relationship by comparing them. On the other hand, a computed correlation coefficient, .83 for example, describes the strength of the relationship between program completion and full-time employment. While the correlation coefficient provides a more accurate answer to the question, its usefulness depends on the statistical sophistication of the reader. There are actually many ways of measuring the strength of relationship statistically. The particular circumstances under which any given technique would be appropriate can be determined by referring to statistics texts or by consulting a statistician.

It is also necessary at times to know the extent of differences between groups. For example, "How much does the beginning weekly salary of program completers differ from the beginning weekly salary of non-completers?" It is possible to answer the question by merely stating the average beginning weekly salaries for both groups. In the case of data from samples, however, this procedure does not reveal whether a difference actually exists, or is the result of expected variations in the samples. To find the answer to that question, a t-test may be used. Differences between groups can be examined through other statistical methods also, and again the best source of information regarding which statistical options are appropriate is either a book on statistics or a statistician. In any case, the final decision as to whether any existing differences are large enough to be important must be made by those interpreting the results of the data analysis.

One question that must be answered during the data analysis is whether those individuals responding to the survey differ from those who did not. If no response bias is found, the use of inferential statistical analyses with data from a random sample is justified and results can be generalized to the population. However, if significant and important differences between respondents and non-respondents are found, the utility of statistics is limited since results cannot be generalized. Likewise, when non-response bias has been identified in a census survey, the results cannot be presented in such a way as to imply that they describe the total population.

In the end, it is the use of common sense by those in charge of the data analysis that will ensure the use of appropriate procedures. Inappropriate or unnecessarily complicated statistical methodology is known as statistical "overkill," and examples are only too prevalent. To use such procedures when a simple analysis answers the question often violates one or more of the assumptions upon which such statistics are based or exceeds the limitations of the data. It also violates a very important principle of data analysis -- to provide the maximum amount of useful information to the reader in the least confusing way.

Prepare Reports and Documentation

Prepare Reports

The usefulness of follow-up results and the way they are used depend largely on the type and quality of the reports produced and disseminated. Since various user groups may have unique data needs, separate reports targeted to their particular needs may be advisable. Assuming data required to meet their needs were built in during the design of the system, the production of multiple reports is not an insurmountable task. Probably no other one component of the follow-up has as much potential for affecting acceptance, future funding, and expansion or revision of the system as does the report or reports which are produced.

The most common users of follow-up data are the Federal government, State agencies, local school boards, State and local advisory committees, administrators and most importantly, school faculty, guidance personnel and administrators. Two new groups which should be considered are the State and Federal Occupational Information Coordinating Committees. Their establishment should increase both the demand for and use of follow-up data. Other groups such as civic organizations may also request information. Follow-up systems personnel are often asked to make presentations or to supply data to others for such presentations. Follow-up reporting, therefore, involves both printed products and oral presentations.

Experience has shown that it is a good idea to provide only requested data or data which has obvious utility for particular user groups, and also to observe a proper "chain of command" policy in the release of data. The establishment of a written policy regarding procedures for the release of data may help avoid conflicts as well as embarrassment. Data will normally be released only in aggregate form, placing the burden of analysis on the follow-up system. It is doubtful that the system can legally refuse to supply data which are not individually identifiable at reasonable cost to persons or groups with a legitimate interest. A written policy, however, may help protect the system against unreasonable demands as well as unwarranted control by administrative or funding agencies.

Interpret findings - Follow-up reports tend to be either rigidly noncommittal about what the data mean, or go so far in attempting to explain the data that they make unwarranted generalizations. The ideal lies somewhere in between, but many of the studies reviewed during the present effort were non-committal almost to the extent of sterility. Some researchers argue that it is not the proper role of the follow-up staff to make interpretations, but without doing so the data often fail to mean very much to the reader. Someone has to translate the numbers and percentages and explain what they mean in terms of such things as student and program characteristics and results.

At the very least, follow-up reports should include a brief description of the system, how the data were obtained, a description of the population and sample, return rates, and any other technical information which will assist in making proper use of the report. Some of this information may be included in an appendix if it detracts from what the report has to say about students, programs, and results. Return rates, however, should not be omitted from the main text of the report because of their importance to the integrity of the data being reported. If there is a high probability of non-response bias or if such bias was detected through a non-respondent survey, the reader should be cautioned that the results apply only to the respondent group and cannot be generalized to the total population. In other words, what has been learned applies only to those who responded, and not necessarily to those who did not respond.

Findings should be presented in a way that avoids misinterpretation, either intentional or unintentional. No one would expect a follow-up report to be intentionally misleading, but there is always a temptation to sweeten the results a little. For example, if 325 students have rated their instruction "good" while five rated it "excellent," a statement that 330 students rated their instruction good to excellent is factually correct but obviously misleading. Another form of misinterpretation may come about through selection of improper descriptive statistics. Reporting means (averages) without any description of the variability or shape of the distribution can be misleading. In the case of a highly skewed distribution the median would be more appropriate statistic. It is always best to explain clearly and simply what the data actually reveal or do not reveal, with the fewest technical terms possible.

One of the most common technical terms which can be misleading is "significant." It has a precise mathematical meaning in statistical methodology, but in normal English usage it means "important" -- a very imprecise term. A good interpretative report to a lay audience will avoid using it altogether, simply to avoid having to explain its meaning in the context in which it is used. This points out the importance of planning the kind of a report to be produced. If it is going to be used only by a technical audience, then it should be written in the precise language of scientific research. If its principal audiences are to be educational administrators, teachers, researchers, advisory committees, school boards, and other public groups, it must be equally clear and understandable to all of them.

Format reports - Good reports cost money, both in staff time and actual production costs. It is doubtful, however, that the place to get stingy is where most users have their only chance to judge the system. Reports should not necessarily be elaborate or costly, but neither should they be run off on cheap paper on the school mimeograph. There is a common tendency to judge the quality of the contents to some extent by the quality of the document. The actual organization of the report and its structural design, as well as its style, should be governed by the nature of the audience for which it is intended and the purposes they expect it to serve.

As a rule, follow-up reports are of two kinds, planned and special. Planned reports are those which were anticipated and planned for as the system was being developed. They are intended for the identified user groups who were involved in the design of the follow-up, including participating programs and schools, State Department of Education personnel, advisory committees, and others. Special reports, on the other hand, are prepared on request for official agencies, civic groups, researchers or others. Both planned and special reports may take the form of an in-depth presentation and interpretation of the data collected and analyzed, or of a concise summary. In most cases, planned reports will be produced in sufficient quantity to warrant the use of graphics, a good grade of paper, and typeset printing. Special reports may or may not require as much attention to such details.

One kind of planned report which has probably not been adequately used is a general report to the public. This can be a very informative document through which general awareness and acceptance of vocational education is increased. Every effort should be made in such a report to enhance communications through the use of histograms, pie charts, bar braphs, illustrations and other graphic techniques. Actual data content should be limited to those elements which would be interesting and informative to a broad spectrum of the population.

Special reports may be requested throughout the year. In many cases, they can be developed from data already analyzed and provided in one or more of the planned reports. Occasionally, a special report will require additional analyses and interpretation. Since most special reports are for a more restricted audience and involve a specific request for some portion of the data, use of straight data tables and accompanying narrative are usually appropriate. Again, it is helpful to have a written policy regarding procedures to be followed in requesting and in furnishing such special reports.

A number of the systems included in the review document have developed excellent reporting formats, and these can be quite helpful in developing new systems. They vary considerably in content, style, appearance, and even audiences to which they are directed. Anyone considering the development or modification of a follow-up system would be well advised to obtain copies of several. Each system is unique in some respects, and no single report is likely to serve the purposes of another system completely, but the concepts and ideas from several may form the basic structure of what the new system needs.

Prepare Documentation

Without adequate and accurate documentation of the follow-up system and its costs and data, doubts may be raised about any or all of the critical considerations which went into its planning and development -- cost, quality, and adaptability. Moreover, in the event of staff turn-over, considerable duplication can be avoided and orientation of new personnel made easier if the system is well documented. Documentation can also furnish the evidence needed to maintain or change the level of support required for the system's continuing operation. Most existing follow-up systems are unclear about the extent to which they have formally documented their costs, procedures, or data. Unfortunately, documentation is often viewed as a nice thing to do if time permits, an attitude which ignores the importance of formal documentation. Its prevelance suggests that, unless definite plans and procedures are established for documenting the system, it is unlikely to occur. Since the follow-up system will typically be undergoing change, a periodic review of documentation is necessary.

Documentation is generally contained within manuals which can be classified into three basic types: Instructional Manuals or Guides, Procedures Manuals, and System Manuals. In some cases it may not be necessary to prepare all three in order to define the system adequately. There is some overlap in the information they contain, the major differences being in the way information is presented and the amount of detail included. Each type of manual is intended to meet specific needs.

Prepare instructional manuals or guides - Instructional manuals or guides are any documents primarily used to train individuals working with the system. While such manuals are most often used with a decentralized follow-up, they are also useful with centralized systems as well. Examples are found in the bibliography as entry numbers 40, 72, 99 and 243. These are intended to be instructional manuals or guides, but in some cases they border on being procedures manuals.

Essentially, such guides include information about how to collect the data. The particular kinds of information that should be included depends on the methods and procedures used, e.g. copies of data collection instruments, instructions for completing instruments, scripts to be read during data collection activities, information about how data are to be coded, orientation information, description of common problems, when and to whom data should be returned, and how to obtain help if problems arise. These manuals are designed to provide the basic information necessary to work with the system.

Prepare procedures manuals - These are considerably more technical than instructional manuals or guides. They are designed to provide exact information to members of the follow-up staff regarding technical procedures. The manual should describe in some detail the exact routine to be followed in each phase of the follow-up, e.g. training procedures for field staff, data collection, data analysis, and disseminating reports. Procedures manuals are not intended to merely describe the system. They are useful when evaluating the system, and as a resource to other groups and individuals who are considering establishing a follow-up system. Bibliography entries 65, 142, 170, 175, and 197 are examples of this type of document.

Prepare system manuals - The system manual should have three major sections: procedures, data documentation, and costs. The procedures section provides a complete technical, historical and procedural description of the system. The development of the system is described including the rational for making decisions about methodology and procedures. The development of the instrument is described and relevant validity and reliability information included. Changes in or comparisons of different methodologies or procedures are reported if any occurred. The specific computer programs used to analyze the data are identified and described if machine processing is used. If special programs were written for use with the follow-up system they should also be included, as well as descriptions of any program modifications which have been made. The historical record of response rates obtained and such operational details as budget, staff positions, and evaluation reports should be included in the system manual.

The section describing the data should provide all information needed to evaluate or use the data. Each specific data item should be described in terms of its range of legal values, what each code means, and where it exists in an individual data record. If standardized test scores are included in the data, the name of the test, the form or revision, and the time administered should also be included. It is often useful to identify each question in the instrument with its corresponding data item or items. If any interpretations were made in coding the information from the instrument, they should be noted.

Finally, if the data are stored on magnetic tape or disk, the format information necessary for retrieval should be included.

A third section of the system manual contains cost data on developing and operating the system. In order to achieve a complete and accurate record, the following are suggested categories to be included:

Personnel - Salaries (full-time and/or pro-rated), fringe benefits and training of professional, clerical, technical and local staff.

Travel - Expenses incurred in the development and operation of the system and in behalf of the system.

Contractural Services - Consultants, printing, keypunching, computer, and maintenance.

Communications - Postage and telephone.

Office Supplies and Materials - Consumable items, but may include inexpensive non-consumable items.

Special Supplies - Items used for prompts, incentives, or public relations purposes.

Equipment - Non-consumable items necessary in operating the system such as typewriters, copy machine, etc.

Overhead - Office space, heating and lighting, custodial expenses.

Other - All costs which do not properly belong in any of the descriptive categories, for example if fund raising activities were used to obtain money for a mini-computer, their expenses would be included here.

These particular categories are not necessarily those which should be used if a different set fits the local accounting system. What is important is that all costs be entered. When this has been done and the columns totaled, the next question is, how should these costs be reported. If the follow-up is a one-shot effort, all costs are reported only once including both initial development and operations. If it is a recurring activity, developmental costs should be prorated over a period of several years.

Four kinds of expenditure information appear to be most useful: total cost, total developmental cost, total operational costs and cost per usable response. The importance of the first three is obvious. Several kinds of unit costs are suggested in the follow-up literature, including cost per attempted contact, cost per person, and cost per response. Since the intent of the follow-up is to obtain usable data, the best measure of cost per unit would seem to be cost per usable response. Another important factor in reporting costs is an explanation of how they are computed. This may range from simply identifying the types of costs included to a complete itemization including rate schedules. Without some information about how costs are computed, it is not possible to make adequate cost analyses and judgments. Examples of cost reporting can be found in bibliographic entry numbers 67, 89, and 96.

In summary, if complete and accurate documentation of the system is to be achieved, it must be built in as the system is developed. Documentation must be a planned, on-going, systematic effort. It is highly likely that documentation as an afterthought will be incomplete and of doubtful accuracy. Whether three separate manuals are necessary for adequate documentation depends on the complexity of the system. The main object is to describe the system in enough detail to make clear what was done, what was obtained, and what it cost.

Evaluate and Modify the System

Evaluate the System

A follow-up system may be designed to supply the data necessary for decision makers to assess programs, carry out improvements, and plan for the future. It is also a valuable means through which to increase awareness and/or support for vocational education. Any system which plays such a critical role should itself be subject to evaluation. Evaluation can serve both a formative (how can it be improved) and a summative (how well did it work) function. The formative evaluation is conducted during both development and operation of the system with the primary intent of improving one or more of its components. The summative evaluation investigates the effectiveness of the complete system.

Evaluate system outcomes - The extent to which the system meets its stated objectives is the main evaluation question, but not the only one since its objectives might be met but not in the time required or at reasonable costs. Any system however, which consistently does not accomplish what it was created to do will probably not be around very long. Since objectives vary to some extent from system to system, evaluation designs will also vary. It should be kept in mind that system objectives as stated are often difficult to measure. Each objective, however, can be described by one or more anticipated outcomes or indicators of outcomes, and these are measurable. For example, providing accurate and timely information useful for accomplishing the objective "To assess how well the program prepared individuals for employment and/or future education" may be addressed by several items in both the former student and the employer follow-up surveys. The collective results of the student and employer assessment of training quality may be evaluated in terms of item completion by respondents and usefulness of the data acquired to the requesting individuals or groups. The process of aligning objectives with specific data is in itself a valuable check on system effectiveness. A particular data item may contribute to more than one objective but any item which does not contribute to at least one objective should be questioned.

Evaluate system procedures - While objectives-outcomes evaluation is critical to overall evaluation and improvement of the system, evaluation of both development and operating procedures may point the way to more efficient or effective practices. Procedures used to obtain response during the data collection, for example, may be found in some cases to have been too costly or to have produced unacceptable results. Data recording or coding procedures may have been less efficient or accurate than were anticipated. Excessive variation in staff workload may indicate a need for rescheduling or reassignment of tasks.

Accurate documentation of the procedures employed during both development and operation of the system is necessary in evaluating those procedures. A considerable amount of formative evaluation of procedures usually takes place during development and initial testing, but a more formal retrospective review in the context of the total system is also advisable. In the development and early testing stage, the system is under constant scrutiny and review, but usually on a step-by-step basis. Even initial testing is very limited and specific in scope. Only after a full cycle of the total system is it possible to look back over that experience and assess the extent to which the pieces all went together and the resulting performance was satisfactory. In all probability some redesign -- some changes -- will have to be made, and not only after the first year of operation but after the second and third and perhaps each year. Advances in the technology of follow-up systems are being made each year, and that alone is reason enough for a periodic evaluation.

Solicit external evaluation - Three primary sources of evaluative data are the system documentation, system output, and system users. The use of follow-up data in assessing objectives-outcomes congruence and of system documentation in process evaluation were discussed in the previous section. Feedback from users is a third and very important source for assessing the "value" of the system. The previous two sources are normally internal sources while the latter is a measure of the external validity of the total effort. Many systems receive unsolicited feedback, both positive and negative, from users. For example, additional data and clarification of findings may be requested, errors pointed out, and the results questioned. While these judgements may have some value in system improvement, unsolicited feedback usually represents a small and uneven sample of user evaluation. A survey of data recipients would be better but is seldom done. Some of the methods which are used to obtain feedback from system users are:

1. Inclusion of a form in each follow-up report with a request that it be completed and returned.
2. Formal meetings with representatives of each user group with the announced purpose of evaluating the system.
3. A mail-out survey of user groups using an evaluation questionnaire.

A rough indication of the short term impact may be obtained by asking to what extent the reports and information from the system were or are being used. Asking the users for their appraisal of impact may also be helpful in making an evaluation. Usually the evaluation will be conducted by the follow-up staff but sometimes unusual problems or the insistence of funding sources may require use of external evaluators. A number of agencies, as well as individuals who have extensive experience, are able to do this.

Modify the System

System modification is a continuing process, as already noted. Changes in the needs of users, new reporting requirements by Federal or State agencies, changes in programs or populations, advances in technology, and other changes external to the actual follow-up system often mandate change. Regular evaluation, both formal and informal, will almost always identify modifications that could be made. There are several points to keep in mind:

- One or more procedural or product components of the system may need to be modified due to changing external factors which affect the system.
- Modifications may be mandated by inefficiencies or inadequacies of existing system components.
- Modifications may be investigated routinely to improve the system even though it is functioning satisfactorily -- these may be motivated by the desire to increase adaptability, improve quality, reduce cost or maximize the accomplishment of one or more system objectives.

- Modifications of any one part of a system is apt to affect one or more other parts of the system. Therefore, consideration should be given to the system-wide impact of proposed modifications.
- Modifications necessitate further evaluation to assess their effectiveness.

Evaluation and modification is a cyclical process. Informal evaluation takes place as the system is developed and during its operation. Such evaluation, however, tends to focus on a single component or procedure at a particular point in time. The cumulative affect of modifications brought about through such informal procedures may therefore not be known. Thus, it is advisable to periodically conduct a more structured formal evaluation of the total system, which is better able to assess interactions of components within the system. As a final note, the importance of accurate and total system documentation has been stressed. The same emphasis should be placed on documentation of all modifications. The system which is carefully designed, with adequate attention to the flexibility or adaptability of its major components, will have less difficulty in meeting the need for modification whenever this occurs.